

SEQUENCE LISTING

<110> THE UNIVERSITY OF BRITISH COLUMBIA, et al.

<120> BACTERIAL VIRULENCE FACTORS AND USES THEREOF

<130> 80021-735

<140> NOT YET ASSIGNED

<141> 2004-10-29

<150> US 60/515,703

<151> 2003-10-31

<160> 84

<170> PatentIn version 3.3

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<212> DNA

<213> Citrobacter rodentium

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<213> Enteropathogenic E. coli

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 <213> Enterohemorrhagic E. coli

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 <213> Citrobacter rodentium

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<210> 5
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 <213> *Citrobacter rodentium*

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 <212> DNA
 <213> *Enteropathogenic E. coli*

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 <212> DNA
 <213> *Enterohemorrhagic E. coli*

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<210> 8

<211> 993

<212> DNA

<213> *Citrobacter rodentium*

<400> 8

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<210> 9

<211> 993

<212> DNA

<213> *Enteropathogenic E. coli*

<400> 9

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<213> *Enterohemorrhagic E. coli*

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<210> 11
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 <212> DNA
 <213> *Citrobacter rodentium*

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<210> 13
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 <213> *Enterohemorrhagic E. coli*

<400> 13

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agagatatag	atgctgagaa	ccatcggggg	actgggttcg	atcttctactg	taatctgaat	360
gcagttgaat	atccctgtgg	ggaggggatt	agcgtgggtg	actttcatgc	gactattgtt	420
tttcatgagt	tgctccatgt	tttccacaat	ttaaatgggg	agcgtttgaa	agttgagagt	480
tcccgcagcag	aatcacaaaa	atactctcca	cttttactcg	aagaagccag	gactgttggg	540
ttgggggctt	tttcagagga	ggtgctttca	gaaaataaat	tccacgaaga	gattgggatg	600
ccccgtagaa	cctcctaccc	gcrcgactca	gctcttattc	atgatgacaa	tacagtgagt	660
ctgggattcc	aacaggtaag	actgcatcca	ttgcttttag			699

<210> 14

<211> 506

<212> DNA

<213> *Citrobacter rodentium*

<400> 14

tactttaatg	aatcacccaa	tgtatatgat	aagaagtata	tatctggcgt	aactagagga	60
gtagctgaac	taaaacagga	aggattttatt	aacgagaaag	ccaggcgact	tgcttatatg	120
caagcaatgt	attctgtatg	tccggaagag	tttaaacctta	tttccagaaa	cgaagctagt	180
acaccggaag	gcagctggct	aacagttata	tccggaaaac	gcccaatggg	acagttttct	240
gtagatagct	tatatcatcc	tgacttacat	gcattgtgtg	agcttccgga	tatttgttgc	300
aagatcttcc	ctaaagaaaa	caatgatctt	ttgtatatag	tgattgtgta	cagaaatgac	360
agccctctgg	gagaacaacg	agcaaactcg	tttatagaat	tatataatat	aaaaagagac	420
atcatgcagg	aattaaatta	tgaatctcca	gagttaaagg	ctgtgaaatc	tgaaatgatt	480
attgcacgtg	aaatgggaga	aatctt				506

<210> 15

<211> 466

<212> DNA

<213> *Citrobacter rodentium*

<400> 15

caatgtatat	gataagaagt	atatatctgg	cgtaactaga	ggagtagctg	aactaaaaca	60
ggaaggattt	attaacgaga	aagccaggcg	acttgcttat	atgcaagcaa	tgtattctgt	120
atgtccggaa	gagtttaaac	ctattttccag	aaacgaagct	agtacaccgg	aaggcagctg	180
gctaacagtt	atatccggaa	aacgcccatt	gggacagttt	tctgtagata	gcttatatca	240
tcctgactta	catgcattgt	gtgagcttcc	ggatatttgt	tgcaagatct	tccctaaaga	300
aaacaatgat	tttttgtata	tagtgattgt	gtacagaaat	gacagccctc	tgggagaaca	360
acgagcaaat	cgattttatg	aattatataa	tataaaaaga	gacatcatgc	aggaattaaa	420
ttatgaatct	ccagagttta	aggctgtgaa	atctgaaatg	attatt		466

<210> 16

<211> 675

<212> DNA

<213> Enteropathogenic *E. coli*

<400> 16

atgattaatc	ctgttactaa	tactcagggc	gtgtccccta	taaataactaa	atatgctgaa	60
catgtgggtg	aaaatattta	cccgaataat	aaacatgatt	acttttaatga	atcacccaat	120
atatatgata	agaagtatat	atccggtata	accagaggag	tagctgaact	aaaacaggaa	180
gaatttggtt	acgagaaaagc	cagacggttt	tcttatatga	agactatgta	ttctgtatgt	240
ccagaagcgt	ttgaacctat	ttccagaaat	gaagccagta	caccggaagg	aagctggcta	300
acagttatat	ccggaaaaacg	cccaatgggg	cagttttctg	tagatagttt	atacaatcct	360
gatttacatg	cattatgtga	gcttccggag	atttgttgta	agatcttccc	taaagaaaat	420
aatgattttt	tatacatagt	tggtgtgtac	agaaatgaca	gccctctagg	agaacaacgg	480
gcaaatagat	ttatagaatt	atataatata	aaaagagata	tcatgcagga	attaaattat	540

gagttaccag	agttaaaggc	agtaaaatct	gaaatgatta	tcgcacgtga	aatgggagaa	600
atcttttagct	acatgcctgg	ggaaatagac	agttatatga	aatacataaa	taataaaactt	660
tctaaaattg	agtag					675

<210> 17
 <211> 675
 <212> DNA
 <213> Enterohemorrhagic E. coli

<400> 17						
atgattaatc	ctgttactaa	tactcagggc	gtgtccccta	taaataactaa	atatgctgaa	60
catgtggtga	aaaatatatta	cccggaaatt	aaacatgatt	actttaatga	atcacccaat	120
atatatgata	agaagtatat	atccggtata	accagaggag	tagctgaact	aaaacaggaa	180
gaatttggtta	acgagaaagc	cagacgggtt	tcttatatga	agactatgta	ttctgtatgt	240
ccagaagcgt	ttgaacctat	ttccagaaat	gaagccagta	caccggaagg	aagctggcta	300
acagttatat	ccggaaaacg	cccaatgggg	cagttttctg	tagatagttt	atacaatcct	360
gattttacatg	cattatgtga	gcttccggac	atttggttga	agatcttccc	taaagaaaat	420
aatgattttt	tatacatagt	tggtgtgtac	agaaatgaca	gccctctagg	agaacaacgg	480
gcaaatagat	ttatagaatt	atataatata	aaaagagata	tcatgcagga	attaaattat	540
gagttaccag	agttaaaggc	agtaaaatct	gaaatgatta	tcgcacgtga	aatgggagaa	600
atcttttagct	acatgcctgg	ggaaatagac	agttatatga	aatacataaa	taataaaactt	660
tctaaaattg	agtag					675

<210> 18
 <211> 570
 <212> DNA
 <213> Citrobacter rodentium

<400> 18						
atgttaacca	caagtgggtc	ttcagcaaat	ctttactcat	ggatgtatat	ctcaggaaaa	60
gagaatcctt	cgactccgga	atcagtaagt	gaacttaatc	ataatcattt	tctttctcct	120
gaattacagg	agaaactgga	tggtatgttc	gccatatatt	catgtgccag	aaacaatgat	180
gagcgtgaga	atattttaccc	ggagctaagg	gattttgtaa	gtagcctaata	ggataagaga	240
aacaatgtgt	ttgaggtgat	aaatgaagat	actgatgagg	tgaccggagc	tctgagagcg	300
ggaatgacga	tagaggacag	ggatagttat	atcagggatc	ttttttttct	gcattcattg	360
aaagtaaaaa	ttgaggaaaag	cagacaagat	aaagaggatt	ggaaatgtaa	agtttatgat	420
ctgctatgtc	cgcatcattc	ttcagagcta	tatggggatc	tacgggcaat	caaatgcctc	480
gttgaaggat	gcagtgatga	ttttagtcct	tttgatacta	ttaagggtgcc	ggatcttact	540
tacaacaaaag	gatcttttaca	atgtggatga				570

<210> 19
 <211> 519
 <212> DNA
 <213> Citrobacter rodentium

<400> 19						
agcaaatctt	tactcatgga	tgtatatctc	aggaaaagag	aatccttcga	ctccggaatc	60
agtaagtga	cttaatcata	atcattttct	ttctcctgaa	ttacaggaga	aactggatgt	120
tatgttcgcc	atatattcat	gtgccagaaa	caatgatgag	cgtgagaata	tttaccgga	180
gctaagggat	tttgtaagta	gcctaattga	taagagaaac	aatgtgtttg	aggtgataaa	240
tgaagatact	gatgaggtga	ccggagctct	gagagcgga	atgacgatag	aggacaggga	300
tagttatata	agggatcttt	ttttctgca	ttcattgaaa	gtaaaaattg	aggaaagcag	360
acaagataaa	gaggattgga	aatgtaaagt	ttatgatctg	ctatgtccgc	atcattcttc	420
agagctatat	ggggatctac	gggcaatcaa	atgcctcggt	gaaggatgca	gtgatgattt	480
tagtcctttt	gatactatta	aggtgccgga	tcttactta			519

<210> 20
 <211> 570
 <212> DNA
 <213> Enteropathogenic E. coli

<400> 20
 atgttaccaa caagtgggttc ttcagcaaat ctttattcat ggatgtatgt atcaggaaga 60
 ggtaaccctt cgactccgga atcagtaagt gagcttaatc ataatcactt tctttctcct 120
 gaattacaag ataaacttga tgttatgggtc tctatatatt catgtgccag aaataataat 180
 gagcttgagg aaatttttca agagctaagt gcttttgtaa gtgggctgat ggataagaga 240
 aatagtgtat ttgaggtgag aaatgaaaat actgatgagg ttgtcggagc gctgagggcg 300
 ggaatgacga tagaggatag ggatagttat atcagggatc ttttttttct gcattcattg 360
 aaagtaaaaa ttgaggaaag tagacaaggc aaagaagatt cgaaatgtaa agtttataat 420
 ctgctatgtc cgcactcactc ttcagagcta tatgggtgatc tacgagcaat gaaatgcctc 480
 gtggaaggat gcagtgtatga ttttaatcct tttgatatta ttaggggtacc agatcttact 540
 tacaacaaag gatctttaca atgtggatga 570

<210> 21
 <211> 570
 <212> DNA
 <213> Enterohemorrhagic E. coli

<400> 21
 atgttaccaa caagtgggttc ttcagcaaat ctttattcat ggatgtatgt atcaggaaga 60
 ggtaaccctt cgactccgga atcagtaagt gagcttaatc ataatcactt tctttctcct 120
 gaattacaag ataaacttga tgttatgggtc tctatatatt catgtgccag aaataataat 180
 gagcttgagg aaatttttca agagctaagt gcttttgtaa gtgggctgat ggataagaga 240
 aatagtgtat ttgaggtgag aaatgaaaat actgatgagg ttgtcggagc gctgagggcg 300
 ggaatgacga tagaggacag ggatagttat atcagggatc ttttttttct gcattcattg 360
 aaagtaaaaa ttgaggaaag tagacaaggc aaagaagatt cgaaatgtaa agtttataat 420
 ctgctatgtc cgcactcactc ttcagagcta tatgggtgatc tacgagcaat gaaatgcctc 480
 gtggaaggat gcagtgtatga ttttaatcct tttgatatta ttaggggtacc agatcttact 540
 tacaacaaag gatctttaca atgtggatga 570

<210> 22
 <211> 430
 <212> PRT
 <213> Citrobacter rodentium

<400> 22

Met	Asn	Ile	Gln	Pro	Asn	Ile	His	Ser	Gly	Ile	Thr	Thr	Gln	Asn	Asn
1				5					10					15	
Gln	Gln	His	His	His	Ala	Glu	Gln	Val	Pro	Val	Ser	Ser	Ser	Ile	Pro
			20					25					30		
Arg	Ser	Asp	Leu	Pro	Pro	Asn	Cys	Glu	Ala	Gly	Phe	Val	Val	His	Ile
		35					40					45			
Pro	Glu	Asp	Ile	Gln	Gln	His	Val	Pro	Glu	Cys	Gly	Glu	Thr	Thr	Ala
	50					55					60				
Leu	Leu	Ser	Leu	Ile	Lys	Asp	Glu	Gly	Leu	Leu	Ser	Gly	Leu	Asp	Lys
65					70				75					80	
Tyr	Leu	Ala	Pro	His	Leu	Glu	Glu	Gly	Ser	Leu	Gly	Lys	Lys	Ala	Leu
				85					90					95	
Asp	Thr	Phe	Gly	Leu	Phe	Asn	Val	Thr	Gln	Met	Ala	Leu	Glu	Ile	Pro
			100					105					110		
Ser	Ser	Val	Pro	Gly	Ile	Ser	Gly	Lys	Tyr	Gly	Val	Gln	Met	Asn	Ile
		115					120					125			

Val Lys Pro Asp Ile His Pro Thr Thr Gly Asn Tyr Phe Leu Gln Leu
 130 135 140
 Phe Pro Leu His Asp Glu Ile Gly Phe Asn Phe Lys Asp Leu Pro Gly
 145 150 155 160
 Pro Leu Lys Asn Ala Leu Thr Asn Ser Ser Ile Ser Ala Thr Ala Ser
 165 170 175
 Thr Val Ala Pro Thr Pro Asn Asp Pro Met Pro Trp Phe Gly Leu Thr
 180 185 190
 Ala Gln Val Val Arg Asn His Gly Val Glu Leu Pro Ile Val Lys Thr
 195 200 205
 Glu Asn Gly Trp Lys Leu Val Gly Glu Thr Pro Leu Thr Pro Asp Gly
 210 215 220
 Pro Lys Ala Asn Tyr Thr Glu Glu Trp Val Ile Arg Pro Gly Glu Ala
 225 230 235 240
 Asp Phe Lys Tyr Gly Thr Ser Pro Leu Gln Ala Thr Leu Gly Leu Glu
 245 250 255
 Phe Gly Ala His Phe Lys Trp Asp Leu Asp Asn Pro Asn Thr Lys Tyr
 260 265 270
 Ala Ile Leu Thr Asn Ala Ala Ala Asn Ala Ile Gly Ala Ala Gly Gly
 275 280 285
 Phe Ala Val Ser Lys Val Pro Gly Ile Asp Pro Met Leu Ser Pro His
 290 295 300
 Val Gly Ala Met Leu Gly Gln Ala Ala Gly His Ala Val Gln Cys Asn
 305 310 315 320
 Thr Pro Gly Leu Lys Pro Asp Thr Ile Leu Trp Trp Ala Gly Ala Thr
 325 330 335
 Phe Gly Ala Ala Asp Leu Asn Lys Ala Glu Phe Asp Lys Val Arg Phe
 340 345 350
 Thr Asp Tyr Pro Arg Ile Trp Phe His Ala Arg Glu Gly Ala Leu Phe
 355 360 365
 Pro Asn Lys Gln Asp Ile Ala Arg Val Thr Gly Ala Asp Ile Lys Ala
 370 375 380
 Met Glu Glu Gly Val Pro Val Gly His Gln His Pro Lys Pro Glu Asp
 385 390 395 400
 Val Val Ile Asp Ile Glu Gly Gly Asn Ser Pro His His Asn Pro Ser
 405 410 415
 Asn Tyr Val Asp Thr Phe Glu Ile Ile Gln Glu Thr Arg Val
 420 425 430

<210> 23

<211> 440

<212> PRT

<213> Enteropathogenic E. coli

<400> 23

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Met Asn Ile Gln Pro Ile Val Thr Ser Gly Ile Thr Thr Gln Asn Asn
1      5      10      15

Arg His His His Ala Glu Gln Thr Ser Pro Thr Gln Ile Pro Gln Ser
      20      25      30

Glu Leu Pro Asn Gly Cys Glu Thr Gly Phe Val Val His Ile Pro Glu
      35      40      45

Asp Met Gln Arg His Ala Pro Glu Cys Gly Glu Thr Thr Ala Leu Leu
      50      55      60

Ser Leu Ile Lys Asp Glu Gly Leu Leu Ser Gly Leu Asp Lys Tyr Leu
      65      70      75      80

Ala Pro His Leu Glu Glu Gly Ser Ala Gly Lys Lys Ala Leu Asp Met
      85      90      95

Phe Gly Leu Phe Asn Val Ser Gln Met Ala Leu Glu Ile Pro Ser Thr
      100      105      110

Val Pro Gly Ile Ser Gly Lys Tyr Gly Val Gln Leu Asn Ile Val Lys
      115      120      125

Pro Asp Ile His Pro Thr Ser Gly Asn Tyr Phe Leu Gln Ile Phe Pro
      130      135      140

Leu His Asp Glu Ile Gly Ile Asn Phe Lys Asp Leu Pro Gly Pro Leu
      145      150      155      160

Lys Asn Ala Leu Ser Asn Ser Asn Ile Pro Thr Thr Val Ser Thr Ala
      165      170      175

Ala Ser Thr Ile Ala Ser Ala Thr Thr Ser Thr Val Thr Thr Ala Ser
      180      185      190

Lys Asp Pro Ile Pro Trp Phe Gly Leu Thr Ala Gln Val Val Arg Asn
      195      200      205

His Gly Val Glu Leu Pro Ile Val Lys Thr Glu Asn Gly Trp Lys Leu
      210      215      220

Val Gly Glu Thr Pro Leu Thr Pro Asp Gly Pro Lys Ala Asn Tyr Thr
      225      230      235      240

Glu Glu Trp Val Ile Arg Pro Gly Glu Ala Asp Phe Lys Tyr Gly Ala
      245      250      255

Ser Pro Leu Gln Ala Thr Leu Gly Leu Glu Phe Gly Ala His Phe Lys
      260      265      270

Trp Asp Leu Asp Asn Pro Asn Thr Lys Tyr Ala Val Leu Thr Asn Ala
      275      280      285

Ala Ala Asn Ala Leu Gly Ala Val Gly Gly Phe Ala Val Ser Arg Phe
      290      295      300

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Thr Gly Thr Asp Pro Met Leu Ser Pro His Ile Gly Ala Met Val Gly
 305 310 315 320
 Gln Ala Ala Gly His Ala Ile Gln Tyr Asn Thr Pro Gly Leu Lys Pro
 325 330 335
 Asp Thr Ile Leu Trp Trp Ala Gly Thr Thr Leu Gly Leu Ala Asp Leu
 340 345 350
 Asn Lys Ala Glu Phe Gly Glu Ala Arg Phe Thr Asp Tyr Pro Arg Ile
 355 360 365
 Trp Trp His Ala Arg Glu Gly Ala Ile Phe Pro Asn Lys Ala Asp Ile
 370 375 380
 Glu His Ala Thr Gly Ala Asp Ile Arg Ala Met Glu Glu Gly Val Ser
 385 390 395 400
 Val Gly Gln Arg His Pro Asn Pro Glu Asp Val Val Ile Asn Ile Glu
 405 410 415
 Ser Asn Asn Ser Pro His His Asn Pro Ser Asn Tyr Val Asp Thr Val
 420 425 430
 Asp Ile Ile Gln Glu Thr Arg Val
 435 440

<210> 24

<211> 441

<212> PRT

<213> Enterohemorrhagic E. coli

<400> 24

Met Asn Ile Gln Pro Thr Ile Gln Ser Gly Ile Thr Ser Gln Asn Asn
 1 5 10 15
 Gln His His Gln Thr Glu Gln Ile Pro Ser Thr Gln Ile Pro Gln Ser
 20 25 30
 Glu Leu Pro Leu Gly Cys Gln Ala Gly Phe Val Val Asn Ile Pro Asp
 35 40 45
 Asp Ile Gln Gln His Ala Pro Glu Cys Gly Glu Thr Thr Ala Leu Leu
 50 55 60
 Ser Leu Ile Lys Asp Lys Gly Leu Leu Ser Gly Leu Asp Glu Tyr Ile
 65 70 75 80
 Ala Pro His Leu Glu Glu Gly Ser Ile Gly Lys Lys Thr Leu Asp Met
 85 90 95
 Phe Gly Leu Phe Asn Val Thr Gln Met Ala Leu Glu Ile Pro Ser Ser
 100 105 110
 Val Ser Gly Ile Ser Gly Lys Tyr Gly Val Gln Leu Asn Ile Val Lys
 115 120 125
 Pro Asp Ile His Pro Thr Ser Gly Asn Tyr Phe Leu Gln Ile Phe Pro
 130 135 140

Leu His Asp Glu Ile Gly Phe Asn Phe Lys Asp Leu Pro Gly Pro Leu
 145 150 155 160
 Lys Asn Ala Leu Ser Asn Ser Asn Ile Ser Thr Thr Ala Val Ser Thr
 165 170 175
 Ile Ala Ser Thr Gly Thr Ser Ala Thr Thr Ser Thr Val Thr Thr Glu
 180 185 190
 Pro Lys Asp Pro Ile Pro Trp Phe Gly Leu Thr Ala Gln Val Val Arg
 195 200 205
 Asn His Gly Val Glu Leu Pro Ile Val Lys Thr Glu Asn Gly Trp Lys
 210 215 220
 Leu Val Gly Glu Thr Pro Leu Thr Pro Asp Gly Pro Lys Ala Asn Tyr
 225 230 235 240
 Thr Glu Glu Trp Val Ile Arg Pro Gly Glu Ala Asp Phe Lys Tyr Gly
 245 250 255
 Ala Ser Pro Leu Gln Ala Thr Leu Gly Leu Glu Phe Gly Ala His Phe
 260 265 270
 Lys Trp Asp Leu Asp Asn Pro Asn Thr Lys Tyr Ala Val Leu Thr Asn
 275 280 285
 Ala Ala Ala Asn Ala Leu Gly Ala Leu Gly Gly Phe Ala Val Ser Arg
 290 295 300
 Phe Ala Ser Thr Asp Pro Met Leu Ser Pro His Ile Gly Ala Met Val
 305 310 315 320
 Gly Gln Ala Ala Gly His Ala Ile Gln Tyr Asn Thr Pro Gly Leu Lys
 325 330 335
 Pro Asp Thr Ile Leu Trp Trp Ala Gly Ala Thr Leu Gly Ala Ala Asp
 340 345 350
 Leu Asn Lys Ala Glu Phe Glu Val Ala Arg Phe Thr Asp Tyr Pro Arg
 355 360 365
 Ile Trp Trp His Ala Arg Glu Gly Ala Ile Phe Pro Asn Lys Ala Asp
 370 375 380
 Ile Glu His Ala Thr Gly Ala Asp Ile Arg Ala Met Glu Glu Gly Ile
 385 390 395 400
 Pro Val Gly Gln Arg His Pro Asn Pro Glu Asp Val Val Ile Asp Ile
 405 410 415
 Glu Ser Asn Gly Leu Pro His His Asn Pro Ser Asn His Val Asp Ile
 420 425 430
 Phe Asp Ile Ile Gln Glu Thr Arg Val
 435 440

<210> 25

<211> 204

<212> PRT

<213> Citrobacter rodentium

<400> 25

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Ile Leu Phe Gln Trp Phe Glu Ala Arg Pro Glu Arg Tyr Gly Lys Gly
1           5           10           15
Glu Val Pro Ile Leu Asn Thr Lys Glu His Pro Tyr Leu Ser Asn Ile
20           25           30
Ile Asn Ala Ala Lys Ile Glu Asn Glu Arg Val Ile Gly Val Leu Val
35           40           45
Asp Gly Asp Phe Thr Tyr Glu Gln Arg Lys Glu Phe Leu Ser Leu Glu
50           55           60
Asp Glu His Gln Asn Ile Lys Ile Ile Tyr Arg Glu Asn Val Asp Phe
65           70           75           80
Ser Met Tyr Asp Lys Lys Leu Ser Asp Ile Tyr Leu Glu Asn Ile His
85           90           95
Glu Gln Glu Ser Tyr Pro Ala Ser Glu Arg Asp Asn Tyr Leu Leu Gly
100          105          110
Leu Leu Arg Glu Glu Leu Lys Asn Ile Pro Tyr Gly Lys Asp Ser Leu
115          120          125
Ile Glu Ser Tyr Ala Glu Lys Arg Gly His Thr Trp Phe Asp Phe Phe
130          135          140
Arg Asn Leu Ala Val Leu Lys Gly Gly Gly Leu Phe Thr Glu Thr Gly
145          150          155          160
Lys Thr Gly Cys His Asn Ile Ser Pro Cys Gly Gly Cys Ile Tyr Leu
165          170          175
Asp Ala Asp Met Ile Ile Thr Asp Lys Leu Gly Val Leu Tyr Ala Pro
180          185          190
Asp Gly Ile Ala Val His Val Asp Cys Asn Asp Glu
195          200

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<210> 26

<211> 186

<212> PRT

<213> Citrobacter rodentium

<400> 26

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Arg Pro Glu Arg Tyr Gly Lys Gly Glu Val Pro Ile Leu Asn Thr Lys
1           5           10           15
Glu His Pro Tyr Leu Ser Asn Ile Ile Asn Ala Ala Lys Ile Glu Asn
20           25           30
Glu Arg Val Ile Gly Val Leu Val Asp Gly Asp Phe Thr Tyr Glu Gln
35           40           45
Arg Lys Glu Phe Leu Ser Leu Glu Asp Glu His Gln Asn Ile Lys Ile
50           55           60

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Ile Tyr Arg Glu Asn Val Asp Phe Ser Met Tyr Asp Lys Lys Leu Ser
 65 70 75 80
 Asp Ile Tyr Leu Glu Asn Ile His Glu Gln Glu Ser Tyr Pro Ala Ser
 85 90 95
 Glu Arg Asp Asn Tyr Leu Leu Gly Leu Leu Arg Glu Glu Leu Lys Asn
 100 105 110
 Ile Pro Tyr Gly Lys Asp Ser Leu Ile Glu Ser Tyr Ala Glu Lys Arg
 115 120 125
 Gly His Thr Trp Phe Asp Phe Phe Arg Asn Leu Ala Val Leu Lys Gly
 130 135 140
 Gly Gly Leu Phe Thr Glu Thr Gly Lys Thr Gly Cys His Asn Ile Ser
 145 150 155 160
 Pro Cys Gly Gly Cys Ile Tyr Leu Asp Ala Asp Met Ile Ile Thr Asp
 165 170 175
 Lys Leu Gly Val Leu Tyr Ala Pro Asp Gly
 180 185

<210> 27
 <211> 329
 <212> PRT
 <213> Enteropathogenic E. coli

<400> 27

Met Leu Ser Ser Leu Asn Val Leu Gln Ser Ser Phe Arg Gly Lys Thr
 1 5 10 15
 Ala Leu Ser Asn Ser Thr Leu Leu Gln Lys Val Ser Phe Ala Gly Lys
 20 25 30
 Glu Tyr Ser Leu Glu Pro Ile Asp Glu Arg Thr Pro Ile Leu Phe Gln
 35 40 45
 Trp Phe Glu Ala Arg Pro Glu Arg Tyr Glu Lys Gly Glu Val Pro Ile
 50 55 60
 Leu Asn Thr Lys Glu His Pro Tyr Leu Ser Asn Ile Ile Asn Ala Ala
 65 70 75 80
 Lys Ile Glu Asn Glu Arg Ile Ile Gly Val Leu Val Asp Gly Asn Phe
 85 90 95
 Thr Tyr Glu Gln Lys Lys Glu Phe Leu Asn Leu Glu Asn Glu His Gln
 100 105 110
 Asn Ile Lys Ile Ile Tyr Arg Ala Asp Val Asp Phe Ser Met Tyr Asp
 115 120 125
 Lys Lys Leu Ser Asp Ile Tyr Leu Glu Asn Ile His Lys Gln Glu Ser
 130 135 140
 Tyr Pro Ala Ser Glu Arg Asp Asn Tyr Leu Leu Gly Leu Leu Arg Glu
 145 150 155 160

Glu Leu Lys Asn Ile Pro Glu Gly Lys Asp Ser Leu Ile Glu Ser Tyr
 165 170 175
 Ala Glu Lys Arg Glu His Thr Trp Phe Asp Phe Phe Arg Asn Leu Ala
 180 185 190
 Ile Leu Lys Ala Gly Ser Leu Phe Thr Glu Thr Gly Lys Thr Gly Cys
 195 200 205
 His Asn Ile Ser Pro Cys Ser Gly Cys Ile Tyr Leu Asp Ala Asp Met
 210 215 220
 Ile Ile Thr Asp Lys Leu Gly Val Leu Tyr Ala Pro Asp Gly Ile Ala
 225 230 235 240
 Val His Val Asp Cys Asn Asp Glu Ile Lys Ser Leu Glu Asn Gly Ala
 245 250 255
 Ile Val Val Asn Arg Ser Asn His Pro Ala Leu Leu Ala Gly Leu Asp
 260 265 270
 Ile Met Lys Ser Lys Val Asp Ala His Pro Tyr Tyr Asp Gly Leu Gly
 275 280 285
 Lys Gly Ile Lys Arg His Phe Asn Tyr Ser Ser Leu His Asn Tyr Asn
 290 295 300
 Ala Phe Cys Asp Phe Ile Glu Phe Lys His Glu Asn Ile Ile Pro Asn
 305 310 315 320
 Thr Ser Met Tyr Thr Ser Ser Ser Trp
 325

<210> 28
 <211> 329
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 28

Met Leu Ser Ser Leu Asn Val Leu Gln Ser Ser Phe Arg Gly Lys Thr
 1 5 10 15
 Ala Leu Ser Asn Ser Thr Leu Leu Gln Lys Val Ser Phe Ala Gly Lys
 20 25 30
 Glu Tyr Pro Leu Glu Pro Ile Asp Glu Lys Thr Pro Ile Leu Phe Gln
 35 40 45
 Trp Phe Glu Ala Arg Pro Glu Arg Tyr Glu Lys Gly Glu Val Pro Ile
 50 55 60
 Leu Asn Thr Lys Glu His Pro Tyr Leu Ser Asn Ile Ile Asn Ala Ala
 65 70 75 80
 Lys Ile Glu Asn Glu Arg Ile Ile Gly Val Leu Val Asp Gly Asn Phe
 85 90 95
 Thr Tyr Glu Gln Lys Lys Glu Phe Leu Ser Leu Glu Asn Glu Tyr Gln
 100 105 110

Asn Ile Lys Ile Ile Tyr Arg Ala Asp Val Asp Phe Ser Met Tyr Asp
 115 120 125
 Lys Lys Leu Ser Asp Ile Tyr Leu Glu Asn Ile His Lys Gln Glu Ser
 130 135 140
 Tyr Pro Ala Ser Glu Arg Asp Asn Tyr Leu Leu Gly Leu Leu Arg Glu
 145 150 155 160
 Glu Leu Lys Asn Ile Pro Glu Gly Lys Asp Ser Leu Ile Glu Ser Tyr
 165 170 175
 Ala Glu Lys Arg Glu His Thr Trp Phe Asp Phe Phe Arg Asn Leu Ala
 180 185 190
 Met Leu Lys Ala Gly Ser Leu Phe Thr Glu Thr Gly Lys Thr Gly Cys
 195 200 205
 His Asn Ile Ser Pro Cys Ser Gly Cys Ile Tyr Leu Asp Ala Asp Met
 210 215 220
 Ile Ile Thr Asp Lys Leu Gly Val Leu Tyr Ala Pro Asp Gly Ile Ala
 225 230 235 240
 Val His Val Asp Cys Asn Asp Glu Ile Lys Ser Leu Glu Asn Gly Ala
 245 250 255
 Ile Val Val Asn Arg Ser Asn His Pro Ala Leu Leu Ala Gly Leu Asp
 260 265 270
 Ile Met Lys Ser Lys Val Asp Ala His Pro Tyr Tyr Asp Gly Leu Gly
 275 280 285
 Lys Gly Ile Lys Arg His Phe Asn Tyr Ser Ser Leu His Asp Tyr Asn
 290 295 300
 Ala Phe Cys Asp Phe Ile Glu Phe Lys His Glu Asn Ile Ile Pro Asn
 305 310 315 320
 Thr Ser Met Tyr Thr Cys Ser Ser Trp
 325

<210> 29
 <211> 326
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 29

Met Leu Ser Pro Ile Arg Thr Thr Phe His Asn Ser Val Asn Ile Val
 1 5 10 15
 Gln Ser Ser Pro Cys Gln Thr Val Ser Phe Ala Gly Lys Glu Tyr Glu
 20 25 30
 Leu Lys Val Ile Asp Glu Lys Thr Pro Ile Leu Phe Gln Trp Phe Glu
 35 40 45
 Pro Asn Pro Glu Arg Tyr Lys Lys Asp Glu Val Pro Ile Val Asn Thr
 50 55 60

Lys Gln His Pro Tyr Leu Asp Asn Val Thr Asn Ala Ala Arg Ile Glu
 65 70 75 80
 Ser Asp Arg Met Ile Gly Ile Phe Val Asp Gly Asp Phe Ser Val Asn
 85 90 95
 Gln Lys Thr Ala Phe Ser Lys Leu Glu Arg Asp Phe Glu Asn Val Met
 100 105 110
 Ile Ile Tyr Arg Glu Asp Val Asp Phe Ser Met Tyr Asp Arg Lys Leu
 115 120 125
 Ser Asp Ile Tyr His Asp Ile Ile Cys Glu Gln Arg Leu Arg Thr Glu
 130 135 140
 Asp Lys Arg Asp Glu Tyr Leu Leu Asn Leu Leu Glu Lys Glu Leu Arg
 145 150 155 160
 Glu Ile Ser Lys Ala Gln Asp Ser Leu Ile Ser Met Tyr Ala Lys Lys
 165 170 175
 Arg Asn His Ala Trp Phe Asp Phe Phe Arg Asn Leu Ala Leu Leu Lys
 180 185 190
 Ala Gly Glu Ile Phe Arg Cys Thr Tyr Asn Thr Lys Asn His Gly Ile
 195 200 205
 Ser Phe Gly Glu Gly Cys Ile Tyr Leu Asp Met Asp Met Ile Leu Thr
 210 215 220
 Gly Lys Leu Gly Thr Ile Tyr Ala Pro Asp Gly Ile Ser Met His Val
 225 230 235 240
 Asp Arg Arg Asn Asp Ser Val Asn Ile Glu Asn Ser Ala Ile Ile Val
 245 250 255
 Asn Arg Ser Asn His Pro Ala Leu Leu Glu Gly Leu Ser Phe Met His
 260 265 270
 Ser Lys Val Asp Ala His Pro Tyr Tyr Asp Gly Leu Gly Lys Gly Val
 275 280 285
 Lys Lys Tyr Phe Asn Phe Thr Pro Leu His Asn Tyr Asn His Phe Cys
 290 295 300
 Asp Phe Ile Glu Phe Asn His Pro Asn Ile Ile Met Asn Thr Ser Gln
 305 310 315 320
 Tyr Thr Cys Ser Ser Trp
 325

<210> 30

<211> 330

<212> PRT

<213> Citrobacter rodentium

<400> 30

Met Lys Ile Pro Ser Leu Gln Pro Ser Phe Asn Phe Phe Ala Pro Ala
 1 5 10 15

Gly Tyr Ser Ala Ala Val Ala Pro Asn Arg Ser Asp Asn Ala Tyr Ala
 20 25 30
 Asp Tyr Val Leu Asp Ile Gly Lys Arg Ile Pro Leu Ser Ala Glu Asp
 35 40 45
 Leu Gly Asn Leu Tyr Glu Asn Val Ile Arg Ala Val Arg Asp Ser Arg
 50 55 60
 Ser Lys Leu Ile Asp Gln His Thr Val Asp Met Ile Gly Asn Thr Ile
 65 70 75 80
 Leu Asp Ala Leu Ser Arg Ser Gln Thr Phe Arg Asp Ala Val Ser Tyr
 85 90 95
 Gly Ile His Asn Lys Glu Val His Ile Gly Cys Ile Lys Tyr Arg Asn
 100 105 110
 Glu Tyr Glu Leu Asn Gly Glu Ser Pro Val Lys Val Asp Asp Ile Gln
 115 120 125
 Ser Leu Thr Cys Thr Glu Leu Tyr Glu Tyr Asp Val Gly Gln Glu Pro
 130 135 140
 Ile Leu Pro Ile Cys Glu Ala Gly Glu Asn Asp Asn Glu Glu Pro Tyr
 145 150 155 160
 Val Ser Phe Ser Val Ala Pro Asp Thr Asp Ser Tyr Glu Met Pro Ser
 165 170 175
 Trp Gln Glu Gly Leu Ile His Glu Ile Ile His His Val Thr Gly Ala
 180 185 190
 Ser Asp Pro Ser Gly Asp Ser Asn Ile Glu Leu Gly Pro Thr Glu Ile
 195 200 205
 Leu Ala Arg Arg Val Ala Gln Glu Leu Gly Trp Thr Val Pro Asp Phe
 210 215 220
 Ile Gly Tyr Ala Glu Pro Asp Arg Glu Ala His Leu Arg Gly Arg Asn
 225 230 235 240
 Leu Asn Ala Leu Arg Gln Ala Ala Met Arg His Glu Asp Asn Glu Arg
 245 250 255
 Thr Phe Phe Glu Arg Leu Gly Met Ile Ser Asp Arg Tyr Glu Ala Ser
 260 265 270
 Pro Asp Phe Thr Glu Tyr Ser Ala Val Ser Asn Ile Glu Tyr Gly Phe
 275 280 285
 Ile Gln Gln His Asp Phe Pro Gly Leu Ala Ile Asp Asp Asn Leu Gln
 290 295 300
 Asp Ala Asn Gln Ile Gln Leu Tyr His Gly Ala Pro Tyr Ile Phe Thr
 305 310 315 320
 Phe Gly Asp Val Asp Lys His Asn Gln Arg
 325 330

<210> 31
 <211> 330
 <212> PRT
 <213> Enteropathogenic E. coli

<400> 31

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Met Lys Ile Pro Ser Leu Gln Ser Asn Phe Asn Phe Ser Ala Pro Ala
1          5          10          15

Gly Tyr Ser Ala Pro Ile Ala Pro Asn Arg Ala Glu Asn Ala Tyr Ala
          20          25          30

Asp Tyr Val Leu Asp Ile Gly Lys Arg Ile Pro Leu Ser Ala Ala Asp
          35          40          45

Leu Ser Asn Val Tyr Glu Ser Val Ile Arg Ala Val His Asp Ser Arg
          50          55          60

Ser Arg Leu Ile Asp Gln His Thr Val Asp Met Ile Gly Asn Thr Val
65          70          75          80

Leu Asp Ala Leu Ser Arg Ser Gln Thr Phe Arg Asp Ala Val Ser Tyr
          85          90          95

Gly Ile His Asn Glu Lys Val His Ile Gly Cys Ile Lys Tyr Arg Asn
          100          105          110

Glu Tyr Glu Leu Asn Glu Glu Ser Ser Val Lys Ile Asp Asp Ile Gln
          115          120          125

Ser Leu Thr Cys Asn Glu Leu Tyr Glu Tyr Asp Val Gly Gln Glu Pro
          130          135          140

Ile Phe Pro Ile Cys Glu Ala Gly Glu Asn Asp Asn Glu Glu Pro Tyr
          145          150          155          160

Val Ser Phe Ser Val Ala Pro Asp Thr Asp Ser Tyr Glu Met Pro Ser
          165          170          175

Trp Gln Glu Gly Leu Ile His Glu Ile Ile His His Val Thr Gly Ser
          180          185          190

Ser Asp Pro Ser Gly Asp Ser Asn Ile Glu Leu Gly Pro Thr Glu Ile
          195          200          205

Leu Ala Arg Arg Val Ala Gln Glu Leu Gly Trp Ser Val Pro Asp Phe
          210          215          220

Lys Gly Tyr Ala Glu Pro Glu Arg Glu Ala His Leu Arg Leu Arg Asn
          225          230          235          240

Leu Asn Ala Leu Arg Gln Ala Ala Met Arg His Glu Glu Asn Glu Arg
          245          250          255

Ala Phe Phe Glu Arg Leu Gly Thr Ile Ser Asp Arg Tyr Glu Ala Ser
          260          265          270

Pro Asp Phe Thr Glu Tyr Ser Ala Val Ser Asn Ile Gly Tyr Gly Phe
          275          280          285

```

Ile Gln Gln His Asp Phe Pro Gly Leu Ala Ile Asn Asp Asn Leu Gln
 290 295 300

Asp Ala Asn Gln Ile Gln Leu Tyr His Gly Ala Pro Tyr Ile Phe Thr
 305 310 315 320

Phe Gly Asp Val Asp Lys His Asn Gln Arg
 325 330

<210> 32

<211> 330

<212> PRT

<213> Enterohemorrhagic E. coli

<400> 32

Met Lys Ile Pro Ser Leu Gln Ser Asn Phe Asn Phe Ser Ala Pro Ala
 1 5 10 15

Gly Tyr Ser Ala Pro Ile Ala Pro Asn Arg Ala Glu Asn Ala Tyr Ala
 20 25 30

Asp Tyr Val Leu Asp Ile Gly Lys Arg Ile Pro Leu Ser Ala Ala Asp
 35 40 45

Leu Ser Asn Val Tyr Glu Ser Val Ile Arg Ala Val His Asp Ser Arg
 50 55 60

Ser Arg Leu Ile Asp Gln His Thr Val Asp Met Ile Gly Asn Thr Val
 65 70 75 80

Leu Asp Ala Leu Ser Arg Ser Gln Thr Phe Arg Asp Ala Val Ser Tyr
 85 90 95

Gly Ile His Asn Glu Lys Val His Ile Gly Cys Ile Lys Tyr Arg Asn
 100 105 110

Glu Tyr Glu Leu Asn Glu Glu Ser Ser Val Lys Ile Asp Asp Ile Gln
 115 120 125

Ser Leu Thr Cys Asn Glu Leu Tyr Glu Tyr Asp Val Gly Gln Glu Pro
 130 135 140

Ile Phe Pro Ile Cys Glu Ala Gly Glu Asn Asp Asn Glu Glu Pro Tyr
 145 150 155 160

Val Ser Phe Ser Val Ala Pro Asp Thr Asp Ser Tyr Glu Met Pro Ser
 165 170 175

Trp Gln Glu Gly Leu Ile His Glu Ile Ile His His Val Thr Gly Ser
 180 185 190

Ser Asp Pro Ser Gly Asp Ser Asn Ile Glu Leu Gly Pro Thr Glu Ile
 195 200 205

Leu Ala Arg Arg Val Ala Gln Glu Leu Gly Trp Ser Val Pro Asp Phe
 210 215 220

Lys Gly Tyr Ala Glu Pro Glu Arg Glu Ala His Leu Arg Leu Arg Asn
 225 230 235 240

```
<210> 33
<211> 235
<212> PRT
<213> Citrobacter rodentium
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Met	Arg	Pro	Thr	Ser	Leu	Asn	Leu	Thr	Leu	Pro	Ser	Leu	Pro	Leu	Pro
1				5					10					15	
Ser	Ser	Ser	Asn	Ser	Ile	Ser	Ala	Thr	Asp	Ile	Gln	Ser	Leu	Val	Lys
			20					25					30		
Met	Ser	Gly	Val	Arg	Trp	Val	Lys	Asn	Asn	Gln	Gln	Leu	Cys	Phe	His
		35					40					45			
Gly	Thr	Asp	Leu	Lys	Ile	Tyr	Gln	His	Leu	Glu	Ala	Ala	Leu	Asp	Lys
	50					55					60				
Ile	Glu	Ser	Thr	Asp	Thr	Gly	Arg	Thr	Leu	Leu	Asn	Cys	Ile	Glu	Leu
65					70					75					80
Thr	Ser	Arg	Leu	Lys	Ser	Glu	Lys	Leu	Ala	Ile	His	Leu	Asp	Ser	Ala
				85					90					95	
Glu	Leu	Gly	Val	Ile	Ala	His	Cys	Asn	Ala	Asp	Ala	Glu	Asn	Ser	Arg
			100					105					110		
Gly	Thr	Gly	Ser	Asp	Phe	His	Cys	Asn	Leu	Asn	Ala	Val	Glu	Tyr	Pro
		115					120					125			
Cys	Gly	Gln	Gly	Ile	Ser	Leu	Val	Asp	Phe	His	Ala	Cys	Ile	Val	Phe
	130					135				140					
His	Glu	Leu	Leu	His	Val	Phe	His	Asn	Leu	Asn	Gly	Glu	Arg	Leu	Lys
145					150					155					160
Val	Glu	Ser	Ser	Gln	Pro	Glu	Leu	Gln	Thr	His	Ser	Pro	Leu	Leu	Leu
				165					170					175	
Glu	Glu	Ala	Arg	Thr	Val	Gly	Leu	Gly	Ala	Phe	Ser	Glu	Glu	Val	Leu
			180					185					190		

Ser Glu Asn Lys Phe Arg Glu Glu Ile Gly Met Pro Arg Arg Thr Phe
 195 200 205
 Tyr Pro His Asp Ser Ser Leu Ile His Asp Asp Asn Thr Val Thr Gln
 210 215 220
 Arg Phe Gln Arg Lys Lys Leu His Pro Leu Leu
 225 230 235
 <210> 34
 <211> 232
 <212> PRT
 <213> Enteropathogenic E. coli
 <400> 34
 Met Arg Pro Thr Ser Leu Asn Leu Val Leu His Gln Ser Ser Thr Ser
 1 5 10 15
 Ser Ser Met Ser Asp Thr Asp Ile Glu Ser Leu Val Lys Ala Ser Ser
 20 25 30
 Val Gln Trp Ile Lys Asn Asn Pro Gln Leu Arg Phe Gln Gly Thr Asp
 35 40 45
 His Asn Ile Tyr Gln Gln Ile Glu Ala Ala Leu Asp Lys Ile Gly Ser
 50 55 60
 Thr Glu Thr Gly Arg Val Leu Leu Asn Ala Ile Glu Ser Ile Ser Arg
 65 70 75 80
 Leu Lys Ser Glu Thr Val Val Ile His Leu Asn Ser Ser Arg Leu Gly
 85 90 95
 Val Met Ala His Arg Asp Ile Asp Ala Glu Asn His Arg Gly Thr Gly
 100 105 110
 Ser Asp Phe His Cys Asn Leu Asn Ala Val Glu Tyr Pro Cys Gly Glu
 115 120 125
 Gly Ile Ser Val Val Asp Phe His Ala Thr Ile Val Phe His Glu Leu
 130 135 140
 Leu His Val Phe His Asn Leu Asn Gly Glu Arg Leu Lys Val Glu Ser
 145 150 155 160
 Ser Arg Pro Glu Ser Gln Lys Tyr Ser Pro Leu Leu Leu Glu Glu Ala
 165 170 175
 Arg Thr Val Gly Leu Gly Ala Phe Ser Glu Glu Val Leu Ser Glu Asn
 180 185 190
 Lys Phe Arg Glu Glu Ile Gly Met Pro Arg Arg Thr Ser Tyr Pro His
 195 200 205
 Asp Ser Ala Leu Ile His Asp Asp Asn Thr Val Ser Leu Gly Phe Gln
 210 215 220
 Gln Val Arg Leu His Pro Leu Leu
 225 230

<210> 35
 <211> 232
 <212> PRT
 <213> Enterohemorrhagic E. coli

<220>
 <221> MISC_FEATURE
 <222> (208)..(208)
 <223> Xaa = Arg or His

<400> 35

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Met Arg Pro Thr Ser Leu Asn Leu Val Leu His Gln Ser Ser Arg Ser
1              5              10              15

Ser Ser Met Ser Asp Thr Asp Ile Glu Ser Leu Val Lys Ala Ser Ser
          20              25              30

Val Gln Trp Ile Lys Asn Asn Pro Gln Leu Arg Phe Gln Gly Thr Asp
          35              40              45

His Asn Ile Tyr Gln Gln Ile Glu Ala Ala Leu Asp Lys Ile Gly Ser
50              55              60

Thr Glu Thr Gly Arg Val Leu Leu Asn Ala Ile Glu Ser Ile Ser Arg
65              70              75              80

Leu Lys Ser Glu Thr Val Val Ile His Leu Asn Ser Ser Arg Leu Gly
          85              90              95

Val Met Ala His Arg Asp Ile Asp Ala Glu Asn His Arg Gly Thr Gly
          100             105             110

Ser Asp Phe His Cys Asn Leu Asn Ala Val Glu Tyr Pro Cys Gly Glu
          115             120             125

Gly Ile Ser Val Val Asp Phe His Ala Thr Ile Val Phe His Glu Leu
130             135             140

Leu His Val Phe His Asn Leu Asn Gly Glu Arg Leu Lys Val Glu Ser
145             150             155             160

Ser Arg Ala Glu Ser Gln Lys Tyr Ser Pro Leu Leu Leu Glu Glu Ala
          165             170             175

Arg Thr Val Gly Leu Gly Ala Phe Ser Glu Glu Val Leu Ser Glu Asn
          180             185             190

Lys Phe His Glu Glu Ile Gly Met Pro Arg Arg Thr Ser Tyr Pro Xaa
          195             200             205

Asp Ser Ala Leu Ile His Asp Asp Asn Thr Val Ser Leu Gly Phe Gln
210             215             220

Gln Val Arg Leu His Pro Leu Leu
225             230

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<210> 36
 <211> 168
 <212> PRT
 <213> Citrobacter rodentium

<400> 36

Tyr Phe Asn Glu Ser Pro Asn Val Tyr Asp Lys Lys Tyr Ile Ser Gly
 1 5 10 15
 Val Thr Arg Gly Val Ala Glu Leu Lys Gln Glu Gly Phe Ile Asn Glu
 20 25 30
 Lys Ala Arg Arg Leu Ala Tyr Met Gln Ala Met Tyr Ser Val Cys Pro
 35 40 45
 Glu Glu Phe Lys Pro Ile Ser Arg Asn Glu Ala Ser Thr Pro Glu Gly
 50 55 60
 Ser Trp Leu Thr Val Ile Ser Gly Lys Arg Pro Met Gly Gln Phe Ser
 65 70 75 80
 Val Asp Ser Leu Tyr His Pro Asp Leu His Ala Leu Cys Glu Leu Pro
 85 90 95
 Asp Ile Cys Cys Lys Ile Phe Pro Lys Glu Asn Asn Asp Phe Leu Tyr
 100 105 110
 Ile Val Ile Val Tyr Arg Asn Asp Ser Pro Leu Gly Glu Gln Arg Ala
 115 120 125
 Asn Arg Phe Ile Glu Leu Tyr Asn Ile Lys Arg Asp Ile Met Gln Glu
 130 135 140
 Leu Asn Tyr Glu Ser Pro Glu Leu Lys Ala Val Lys Ser Glu Met Ile
 145 150 155 160
 Ile Ala Arg Glu Met Gly Glu Ile
 165

<210> 37

<211> 154

<212> PRT

<213> *Citrobacter rodentium*

<400> 37

Asn Val Tyr Asp Lys Lys Tyr Ile Ser Gly Val Thr Arg Gly Val Ala
 1 5 10 15
 Glu Leu Lys Gln Glu Gly Phe Ile Asn Glu Lys Ala Arg Arg Leu Ala
 20 25 30
 Tyr Met Gln Ala Met Tyr Ser Val Cys Pro Glu Glu Phe Lys Pro Ile
 35 40 45
 Ser Arg Asn Glu Ala Ser Thr Pro Glu Gly Ser Trp Leu Thr Val Ile
 50 55 60
 Ser Gly Lys Arg Pro Met Gly Gln Phe Ser Val Asp Ser Leu Tyr His
 65 70 75 80
 Pro Asp Leu His Ala Leu Cys Glu Leu Pro Asp Ile Cys Cys Lys Ile
 85 90 95

Phe Pro Lys Glu Asn Asn Asp Phe Leu Tyr Ile Val Ile Val Tyr Arg
 100 105 110
 Asn Asp Ser Pro Leu Gly Glu Gln Arg Ala Asn Arg Phe Ile Glu Leu
 115 120 125
 Tyr Asn Ile Lys Arg Asp Ile Met Gln Glu Leu Asn Tyr Glu Ser Pro
 130 135 140
 Glu Leu Lys Ala Val Lys Ser Glu Met Ile
 145 150
 <210> 38
 <211> 224
 <212> PRT
 <213> Enteropathogenic E. coli
 <400> 38
 Met Ile Asn Pro Val Thr Asn Thr Gln Gly Val Ser Pro Ile Asn Thr
 1 5 10 15
 Lys Tyr Ala Glu His Val Val Lys Asn Ile Tyr Pro Lys Ile Lys His
 20 25 30
 Asp Tyr Phe Asn Glu Ser Pro Asn Ile Tyr Asp Lys Lys Tyr Ile Ser
 35 40 45
 Gly Ile Thr Arg Gly Val Ala Glu Leu Lys Gln Glu Glu Phe Val Asn
 50 55 60
 Glu Lys Ala Arg Arg Phe Ser Tyr Met Lys Thr Met Tyr Ser Val Cys
 65 70 75 80
 Pro Glu Ala Phe Glu Pro Ile Ser Arg Asn Glu Ala Ser Thr Pro Glu
 85 90 95
 Gly Ser Trp Leu Thr Val Ile Ser Gly Lys Arg Pro Met Gly Gln Phe
 100 105 110
 Ser Val Asp Ser Leu Tyr Asn Pro Asp Leu His Ala Leu Cys Glu Leu
 115 120 125
 Pro Asp Ile Cys Cys Lys Ile Phe Pro Lys Glu Asn Asn Asp Phe Leu
 130 135 140
 Tyr Ile Val Val Val Tyr Arg Asn Asp Ser Pro Leu Gly Glu Gln Arg
 145 150 155 160
 Ala Asn Arg Phe Ile Glu Leu Tyr Asn Ile Lys Arg Asp Ile Met Gln
 165 170 175
 Glu Leu Asn Tyr Glu Leu Pro Glu Leu Lys Ala Val Lys Ser Glu Met
 180 185 190
 Ile Ile Ala Arg Glu Met Gly Glu Ile Phe Ser Tyr Met Pro Gly Glu
 195 200 205
 Ile Asp Ser Tyr Met Lys Tyr Ile Asn Asn Lys Leu Ser Lys Ile Glu
 210 215 220

<210> 39
 <211> 224
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 39

Met Ile Asn Pro Val Thr Asn Thr Gln Gly Val Ser Pro Ile Asn Thr
 1 5 10 15

Lys Tyr Ala Glu His Val Val Lys Asn Ile Tyr Pro Glu Ile Lys His
 20 25 30

Asp Tyr Phe Asn Glu Ser Pro Asn Ile Tyr Asp Lys Lys Tyr Ile Ser
 35 40 45

Gly Ile Thr Arg Gly Val Ala Glu Leu Lys Gln Glu Glu Phe Val Asn
 50 55 60

Glu Lys Ala Arg Arg Phe Ser Tyr Met Lys Thr Met Tyr Ser Val Cys
 65 70 75 80

Pro Glu Ala Phe Glu Pro Ile Ser Arg Asn Glu Ala Ser Thr Pro Glu
 85 90 95

Gly Ser Trp Leu Thr Val Ile Ser Gly Lys Arg Pro Met Gly Gln Phe
 100 105 110

Ser Val Asp Ser Leu Tyr Asn Pro Asp Leu His Ala Leu Cys Glu Leu
 115 120 125

Pro Asp Ile Cys Cys Lys Ile Phe Pro Lys Glu Asn Asn Asp Phe Leu
 130 135 140

Tyr Ile Val Val Val Tyr Arg Asn Asp Ser Pro Leu Gly Glu Gln Arg
 145 150 155 160

Ala Asn Arg Phe Ile Glu Leu Tyr Asn Ile Lys Arg Asp Ile Met Gln
 165 170 175

Glu Leu Asn Tyr Glu Leu Pro Glu Leu Lys Ala Val Lys Ser Glu Met
 180 185 190

Ile Ile Ala Arg Glu Met Gly Glu Ile Phe Ser Tyr Met Pro Gly Glu
 195 200 205

Ile Asp Ser Tyr Met Lys Tyr Ile Asn Asn Lys Leu Ser Lys Ile Glu
 210 215 220

<210> 40
 <211> 188
 <212> PRT
 <213> Citrobacter rodentium

<400> 40

Met Leu Pro Thr Ser Gly Ser Ser Ala Asn Leu Tyr Ser Trp Met Tyr
 1 5 10 15

Ile Ser Gly Lys Glu Asn Pro Ser Thr Pro Glu Ser Val Ser Glu Leu
 20 25 30

Asn His Asn His Phe Leu Ser Pro Glu Leu Gln Glu Lys Leu Asp Val
 35 40 45
 Met Phe Ala Ile Tyr Ser Cys Ala Arg Asn Asn Asp Glu Arg Glu Asn
 50 55 60
 Ile Tyr Pro Glu Leu Arg Asp Phe Val Ser Ser Leu Met Asp Lys Arg
 65 70 75 80
 Asn Asn Val Phe Glu Val Ile Asn Glu Asp Thr Asp Glu Val Thr Gly
 85 90 95
 Ala Leu Arg Ala Gly Met Thr Ile Glu Asp Arg Asp Ser Tyr Ile Arg
 100 105 110
 Asp Leu Phe Phe Leu His Ser Leu Lys Val Lys Ile Glu Glu Ser Arg
 115 120 125
 Gln Asp Lys Glu Asp Trp Lys Cys Lys Val Tyr Asp Leu Leu Cys Pro
 130 135 140
 His His Ser Ser Glu Leu Tyr Gly Asp Leu Arg Ala Ile Lys Cys Leu
 145 150 155 160
 Val Glu Gly Cys Ser Asp Asp Phe Ser Pro Phe Asp Thr Ile Lys Val
 165 170 175
 Pro Asp Leu Thr Tyr Asn Lys Gly Ser Leu Gln Cys
 180 185

<210> 41
 <211> 171
 <212> PRT
 <213> *Citrobacter rodentium*

<400> 41

Ala Asn Leu Tyr Ser Trp Met Tyr Ile Ser Gly Lys Glu Asn Pro Ser
 1 5 10 15
 Thr Pro Glu Ser Val Ser Glu Leu Asn His Asn His Phe Leu Ser Pro
 20 25 30
 Glu Leu Gln Glu Lys Leu Asp Val Met Phe Ala Ile Tyr Ser Cys Ala
 35 40 45
 Arg Asn Asn Asp Glu Arg Glu Asn Ile Tyr Pro Glu Leu Arg Asp Phe
 50 55 60
 Val Ser Ser Leu Met Asp Lys Arg Asn Asn Val Phe Glu Val Ile Asn
 65 70 75 80
 Glu Asp Thr Asp Glu Val Thr Gly Ala Leu Arg Ala Gly Met Thr Ile
 85 90 95
 Glu Asp Arg Asp Ser Tyr Ile Arg Asp Leu Phe Phe Leu His Ser Leu
 100 105 110
 Lys Val Lys Ile Glu Glu Ser Arg Gln Asp Lys Glu Asp Trp Lys Cys
 115 120 125

Lys Val Tyr Asp Leu Leu Cys Pro His His Ser Ser Glu Leu Tyr Gly
 130 135 140

Asp Leu Arg Ala Ile Lys Cys Leu Val Glu Gly Cys Ser Asp Asp Phe
 145 150 155 160

Ser Pro Phe Asp Thr Ile Lys Val Pro Asp Leu
 165 170

<210> 42

<211> 189

<212> PRT

<213> Enteropathogenic E. coli

<400> 42

Met Leu Pro Thr Ser Gly Ser Ser Ala Asn Leu Tyr Ser Trp Met Tyr
 1 5 10 15

Val Ser Gly Arg Gly Asn Pro Ser Thr Pro Glu Ser Val Ser Glu Leu
 20 25 30

Asn His Asn His Phe Leu Ser Pro Glu Leu Gln Asp Lys Leu Asp Val
 35 40 45

Met Val Ser Ile Tyr Ser Cys Ala Arg Asn Asn Asn Glu Leu Glu Glu
 50 55 60

Ile Phe Gln Glu Leu Ser Ala Phe Val Ser Gly Leu Met Asp Lys Arg
 65 70 75 80

Asn Ser Val Phe Glu Val Arg Asn Glu Asn Thr Asp Glu Val Val Gly
 85 90 95

Ala Leu Arg Ala Gly Met Thr Ile Glu Asp Arg Asp Ser Tyr Ile Arg
 100 105 110

Asp Leu Phe Phe Leu His Ser Leu Lys Val Lys Ile Glu Glu Ser Arg
 115 120 125

Gln Gly Lys Glu Asp Ser Lys Cys Lys Val Tyr Asn Leu Leu Cys Pro
 130 135 140

His His Ser Ser Glu Leu Tyr Gly Asp Leu Arg Ala Met Lys Cys Leu
 145 150 155 160

Val Glu Gly Cys Ser Asp Asp Phe Asn Pro Phe Asp Ile Ile Arg Val
 165 170 175

Pro Asp Leu Thr Tyr Asn Lys Gly Ser Leu Gln Cys Gly
 180 185

<210> 43

<211> 189

<212> PRT

<213> Enterohemorrhagic E. coli

<400> 43

Met Leu Pro Thr Ser Gly Ser Ser Ala Asn Leu Tyr Ser Trp Met Tyr
 1 5 10 15

Val Ser Gly Arg Gly Asn Pro Ser Thr Pro Glu Ser Val Ser Glu Leu
 20 25 30
 Asn His Asn His Phe Leu Ser Pro Glu Leu Gln Asp Lys Leu Asp Val
 35 40 45
 Met Val Ser Ile Tyr Ser Cys Ala Arg Asn Asn Asn Glu Leu Glu Glu
 50 55 60
 Ile Phe Gln Glu Leu Ser Ala Phe Val Ser Gly Leu Met Asp Lys Arg
 65 70 75 80
 Asn Ser Val Phe Glu Val Arg Asn Glu Asn Thr Asp Glu Val Val Gly
 85 90 95
 Ala Leu Arg Ala Gly Met Thr Ile Glu Asp Arg Asp Ser Tyr Ile Arg
 100 105 110
 Asp Leu Phe Phe Leu His Ser Leu Lys Val Lys Ile Glu Glu Ser Arg
 115 120 125
 Gln Gly Lys Glu Asp Ser Lys Cys Lys Val Tyr Asn Leu Leu Cys Pro
 130 135 140
 His His Ser Ser Glu Leu Tyr Gly Asp Leu Arg Ala Met Lys Cys Leu
 145 150 155 160
 Val Glu Gly Cys Ser Asp Asp Phe Asn Pro Phe Asp Ile Ile Arg Val
 165 170 175
 Pro Asp Leu Thr Tyr Asn Lys Gly Ser Leu Gln Cys Gly
 180 185

<210> 44
 <211> 40
 <212> DNA
 <213> Artificial

<220>
 <223> primer Z6024F

<400> 44
 agatctgaag gagatattat gaacattcaa ccgaccatac

40

<210> 45
 <211> 34
 <212> DNA
 <213> Artificial

<220>
 <223> primer Z6024R

<400> 45
 ctcgaggact cttgtttctt cgattatatac aaag

34

<210> 46
 <211> 28
 <212> DNA
 <213> Artificial

<220>
<223> primer NT10

<400> 46
ccggtacctc taaccattga cgcactcg 28

<210> 47
<211> 29
<212> DNA
<213> Artificial

<220>
<223> primer NT11

<400> 47
aacctgcaga actaggtatc tctaattgcc 29

<210> 48
<211> 29
<212> DNA
<213> Artificial

<220>
<223> primer NT12

<400> 48
aacctgcagc tgactatcct cgtatatgg 29

<210> 49
<211> 27
<212> DNA
<213> Artificial

<220>
<223> primer NT13

<400> 49
ccgagctcag gtaatgagac tgtcagc 27

<210> 50
<211> 22
<212> DNA
<213> Artificial

<220>
<223> primer dellF

<400> 50
ggtaccacca cacagaataa tc 22

<210> 51
<211> 26
<212> DNA
<213> Artificial

<220>
<223> primer dellR

<400> 51
cgctagccta tatactgctg ttggtt 26

<210> 52
 <211> 28
 <212> DNA
 <213> Artificial

<220>
 <223> primer del2F

<400> 52
 gctagctgac aggcaactct tggactgg

28

<210> 53
 <211> 29
 <212> DNA
 <213> Artificial

<220>
 <223> primer del2R

<400> 53
 gagctcaaca taatttgatg gattatgat

29

<210> 54
 <211> 24
 <212> DNA
 <213> Artificial

<220>
 <223> primer

<400> 54
 ttccatatga acattcaacc gacc

24

<210> 55
 <211> 24
 <212> DNA
 <213> Artificial

<220>
 <223> primer

<400> 55
 ggaattcaat aatagctgcc atcc

24

<210> 56
 <211> 135
 <212> PRT
 <213> Salmonella

<400> 56

Met Glu Ser Lys Asn Ser Asp Tyr Val Ile Pro Asp Ser Val Lys Asn
 1 5 10 15

Tyr Asn Gly Glu Pro Leu Tyr Ile Leu Val Ser Leu Trp Cys Lys Leu
 20 25 30

Gln Glu Lys Trp Ile Ser Arg Asn Asp Ile Ala Glu Ala Phe Gly Ile
 35 40 45

Asn Leu Arg Arg Ala Ser Phe Ile Ile Thr Tyr Ile Ser Arg Arg Lys
 50 55 60
 Glu Lys Ile Ser Phe Arg Val Arg Tyr Val Ser Tyr Gly Asn Leu His
 65 70 75 80
 Tyr Lys Arg Leu Glu Ile Phe Ile Tyr Asn Val Asn Leu Glu Ala Ala
 85 90 95
 Pro Thr Glu Ser His Val Ser Thr Gly Pro Lys Arg Lys Thr Leu Arg
 100 105 110
 Val Gly Asn Gly Ile Val Gly Gln Ser Ser Ile Trp Asn Glu Met Ile
 115 120 125
 Met Arg Arg Lys Lys Glu Ser
 130 135

<210> 57
 <211> 131
 <212> PRT
 <213> Enterobacteriaceae

<400> 57

Met Cys Glu Gly Tyr Val Glu Lys Pro Leu Tyr Leu Leu Ile Ala Glu
 1 5 10 15
 Trp Met Met Ala Glu Asn Arg Trp Val Ile Ala Arg Glu Ile Ser Ile
 20 25 30
 His Phe Asp Ile Glu His Ser Lys Ala Val Asn Thr Leu Thr Tyr Ile
 35 40 45
 Leu Ser Glu Val Thr Glu Ile Ser Cys Glu Val Lys Met Ile Pro Asn
 50 55 60
 Lys Leu Glu Gly Arg Gly Cys Gln Cys Gln Arg Leu Val Lys Val Val
 65 70 75 80
 Asp Ile Asp Glu Gln Ile Tyr Ala Arg Leu Arg Asn Asn Ser Arg Glu
 85 90 95
 Lys Leu Val Gly Val Arg Lys Thr Pro Arg Ile Pro Ala Val Pro Leu
 100 105 110
 Thr Glu Leu Asn Arg Glu Gln Lys Trp Gln Met Met Leu Ser Lys Ser
 115 120 125
 Met Arg Arg
 130

<210> 58
 <211> 170
 <212> PRT
 <213> Citrobacter rodentium

<400> 58

Met Cys Pro Asp Asn Thr His Ala Lys Lys Gln Tyr Leu Thr Pro Gly
 1 5 10 15

Asn Asp Ile His Tyr Pro Gly Gln Thr Asn His Asp Ala Cys Phe Ile
 20 25 30
 Pro Val Ser Val Arg Gln Tyr Ala Gly Glu Pro Leu Tyr Ile Ile Val
 35 40 45
 Ala His Trp Cys Leu Leu Gln Gln Asn Trp Val Gln Arg Asn Gln Ile
 50 55 60
 Ala Glu Ala Phe His Ile Thr Ala Arg Arg Ala Ser Tyr Leu Ile Ala
 65 70 75 80
 Tyr Leu Arg Ser Lys Thr Ser Arg Val Val Ser Ile Cys Arg His Gln
 85 90 95
 Thr Leu Pro Asn Lys Ala Arg Arg Tyr Glu Ile Tyr Val Ile Arg Val
 100 105 110
 Leu Asp Ser Pro Thr Pro Ser Thr Arg Arg Glu Lys Ala Gly Pro Pro
 115 120 125
 Leu Val Ser Lys Arg Arg Val Gly Asn Gly Asp Arg Ser Met Ala Asn
 130 135 140
 Glu Leu Trp Asn Arg Leu Cys Ser Asn Arg Asn Ala Gly Lys Ile Leu
 145 150 155 160
 Lys Lys Lys Glu Asp Glu Asp Asp Gly Thr
 165 170

<210> 59
 <211> 12
 <212> PRT
 <213> Citrobacter rodentium

<220>
 <221> MISC_FEATURE
 <222> (9)..(9)
 <223> Xaa = Ile or Leu

<400> 59

Gln Gln Glu Asn Ala Pro Ser Ser Xaa Gln Thr Arg
 1 5 10

<210> 60
 <211> 981
 <212> DNA
 <213> Enterohemorrhagic E. coli

<400> 60
 atgctttcac cgataaggac aactttccat aactcagtaa atatagtgc gagttcaccc 60
 tgtcaaacgg tttcttttgc aggaaaggaa tatgagttaa aggtcattga tgaaaaaacg 120
 cctattcttt ttcatgtggt tgaacctaat cctgaacgat ataagaaaga tgaggttcca 180
 atagttaata ctaagcagca tccctattta gataatgtca caaatgcggc aaggatagag 240
 agtgatcgta tgataggat ttttgttgat ggcgattttt cagtcaacca aaagactgct 300
 ttttcaaaat tggaacgaga ttttgaaaat gtaatgataa tctatcggga agatgttgac 360
 ttcagtatgt atgacagaaa actatcagat atttatcatg atattatatg tgaacaaagg 420
 ttacgaactg aagacaaaag agatgaatac ttgttgaatc tgtagagaa agagctgagg 480
 gaaatttcaa aggcgcagga ttctttgatt tctatgtatg caaagaaaag aaatcatgca 540

tggtttgatt	tcttcagaaa	tttagcctta	ttaaaagcag	gagagatatt	caggtgcaca	600
tataatacaa	agaatcacgg	tatttcattc	ggggaggggt	gtatctatct	tgatatggat	660
atgatactta	caggtaaagct	tggtacaata	tatgctcctg	atggaatttc	aatgcatgtg	720
gatcgctgta	atgatatgtg	aaatattgaa	aatagtgcga	taattgttaa	ccgtagtaat	780
catcctgctc	tacttgaggg	actttctttt	atgcatagta	aagtagatgc	tcatccatat	840
tatgatgggt	tggggaaaag	agttaagaaa	tattttaatt	ttacaccatt	acataattat	900
aatcattttt	gtgactttat	tgagtttaac	caccctaata	taatcatgaa	cacaagtcag	960
tatacatgca	gttcattgta	a				981

<210> 61

<211> 531

<212> DNA

<213> Enterohemorrhagic E. coli

<400> 61

atgaatgtcc	ttcgagctca	agtagcatct	agcgggtcgag	gggagtttac	attaggtaat	60
gagactgtca	gcattgtatt	taatgaaacc	gatgggctgt	ttctatccag	cggcagtagt	120
gggggattgc	ttactgagtt	attcctttat	gggtttaata	acggccctga	agctcttcgc	180
gataggatgc	tcagtatgct	ttcggactca	ggtgaagcac	aatcgcaaga	gagtattcag	240
gacaaaatat	ctcaatgtaa	gtttcctggt	agttcaggaa	atttccagtg	cccgccagag	300
tctattcagt	gtccaattac	actagagaga	cccgaagaag	gagtgtttgt	caaaaattca	360
gatagttcgg	cagtatgctg	cttatttgat	tttgatgcat	tttctcgttt	agctagtga	420
ggctcatatc	atccactgac	ccgagaacca	ataacggcat	caatgattat	aagtctcgat	480
aaatgtgttt	atgatcctat	caagggaaac	ttcattataa	aagatagtta	a	531

<210> 62

<211> 912

<212> DNA

<213> Enterohemorrhagic E. coli

<400> 62

atgttatcgc	cctcttctat	aaatttggga	tgttcatgga	attctttaac	cagaaacctg	60
acttcgcctg	ataatcgtgt	tttatcctct	gtaagggatg	ctgctgttca	ctctgatagc	120
gggacgcaag	taacggttg	caacagaaca	tatcgtgttg	tggtcactga	taataagttt	180
tgcgttacaa	gagaaagtca	tagtggttgt	tttactaatc	tggtgcacag	gttgggatgg	240
cctaagggag	agattagcag	aaaaattgag	gctatgctga	atacatcgcc	agtgagcacg	300
actatagaaa	gaggctctgt	tcattcgaac	agacctgatt	tacctccagt	ggattatgcg	360
cagccggagt	tacctccagc	ggattatact	caatcagagt	tgccgagggt	tagcaacaat	420
aaatcacccg	tgccaggtaa	tgttattggg	aaagggtgga	atgctgtcgt	gtatgaagat	480
atggaagata	caacaaaagt	gttgaagatg	tttactatat	ctcaaagcca	tgaagagggtg	540
acaagcgaag	ttcgttggtt	caatcagtat	tatgggtccg	ggagtgcaga	gaaaatatat	600
aatgataatg	gaaatgttat	tggtattaga	atgaataaaa	taaatgggga	atctcttttg	660
gatattccat	cattaccagc	acaagctgaa	caggctatgt	acgatatgtt	tgacagactg	720
gagaaaaaag	gaattctttt	tgttgataca	acagaaacaa	atgtttttata	tgatcgtatg	780
agaaatgaat	ttaatccaat	agatatatat	tcttataaat	tttctgatat	ttcatggagt	840
gaacatcaag	tcattgcaatc	ttatcacgga	ggaaagctgg	atcttattag	tgtagtatta	900
agtaagatat	aa					912

<210> 63

<211> 882

<212> DNA

<213> Enterohemorrhagic E. coli

<400> 63

atgttatcgc	catattctgt	aaatttggga	tgttcatgga	attctttaac	cagaaacctg	60
acttcgcctg	ataatcgtgt	tttatcctct	gtaagggatg	ctgccgttca	ttctgataat	120
ggggcgcaag	ttaaagggttg	caacagaaca	tatcgtgttg	ttgccaccga	taataagttt	180
tgcgttacaa	gagaaagtca	tagtggttgt	tttactaatc	tggtgcacag	gctgggatgg	240
cctaaggggg	agattagcag	gaaaattgag	gtcatgctga	atgcatcacc	agtgagcgct	300
gctattggaaa	gaggcattgt	tcattcgaac	agacctgatt	tacctcctgt	tgattatgca	360
ccgccagagt	taccgagtgt	ggactataac	aggttgtcag	tacctggtaa	tgttattggc	420

```

aaagggggga acgctgtagt atatgaagat gctgaggatg caacaaaagt cctgaagatg 480
tttactacat ctcaaagcaa tgaagagggtg acaagcgaag ttcggtgctt caaccaatat 540
tatgggtgccg ggagtgcaga aaaaatatat ggcaataatg gtgatattat tgggtattaga 600
atggataaaa taaatggaga atcgctttta aatatttcgt ccttgccagc acaggctgag 660
catgctattt acgatatggt tgatagactg gagcaaaaag gaattctttt tgtcgatata 720
acagagacaa atgtccttata tgaccgcgcg aagaatgagt ttaatccaat agatatatca 780
tcttataatg tttccgaccg ttcattggagt gaaagtcaaa taatgcaatc ttatcatggc 840
ggaaagcaag atcttattag tgtgggtatta agtaaaattt ag 882

```

<210> 64
 <211> 153
 <212> DNA
 <213> Enterohemorrhagic E. coli

```

<400> 64
atggtaatgc ctggattagt atcatatata tcatcgactt cattcgcgaa tgagatggcg 60
gagatgcgtc agcaggtaat ggaagggcag attgggtgat ttctcctggg aggggagaga 120
gttagagttt cttattttatt tcaattgcat taa 153

```

<210> 65
 <211> 576
 <212> DNA
 <213> Enterohemorrhagic E. coli

```

<400> 65
atgccattaa cctcagatat tagatcacat tcatttaatc ttgggggtgga ggttggttcgt 60
gcccgaattg tagccaatgg gcgcggagat attacagtcg gtggtgaaac tgtcagtatt 120
gtgtatgatt ctactaatgg gcgcttttca tccagtggcg gtaatggcgg attgctttct 180
gagttattgc ttttgggatt taatagtggg cctcgagccc ttggtgagag aatgctaagt 240
atgctttcgg actcagggtga agcacaatcg caagagagta ttcagaacaa aatatctcaa 300
tgtaagtttt ctgtttgtcc agagagactt cagtgccgcg ttgaggctat tcagtgtcca 360
attacactgg agcagcctga aaaagggtatt tttgtgaaga attcagatgg ttcagatgta 420
tgtactttat ttgatgccgc tgcattttct cgtttgggtg gtgaaggctt accccacca 480
ctgaccgggg aaccaataac ggcattcaata attgtaaaac atgaagaatg catttatgac 540
gataccagag gaaacttcat tataaagggg aattga 576

```

<210> 66
 <211> 630
 <212> DNA
 <213> Enterohemorrhagic E. coli

<220>
 <221> misc_feature
 <222> (439)..(439)
 <223> n = any nucleotide

```

<400> 66
atgcctgtta ccaccttaag tatcccaagt atatctcaat tatctcctgc aagagtacag 60
tctttgcagg atgcagccag acttgaaagt ggaataagaa tatccattgg tagtggccaa 120
tattctgttc actatgtcca actactggat ggattttcag ttgaaccggt gagaggaggc 180
ttactggata ggctattggg gcgtgagcat cgaatggata gaagggtgt ggctctggaa 240
aggcaattaa atggagggtg cgatttttta agtagtggtt ataactattt tcagagtgtc 300
atggcagaac acagagaaaa taaaacagggt aataaaatat taatggaaaa aataaattct 360
tgtgtatttg gaacggattc taatcacttt tcttgcccgg agtcattttt gacatgcccg 420
ataacgctgg acacacctna gactggagtg ttcattgagaa actcacgagg tgctgagata 480
tgctctctat atgataagga tgcgttagtg caacttggtg aaactgggtg aactcatcct 540
ctgagtcgag aacctataac agaataaatg attatgagaa aagacgaatg tcactttgat 600
gcaaaaagag aagctttttg ttgtaagtga 630

```

<210> 67
 <211> 642

<212> DNA

<213> Enterohemorrhagic E. coli

<400> 67

atgcctgtag	atttaacgcc	ttatatattta	cctgggggtta	gtttttttgtc	tgacattcct	60
caagaaacct	tgtctgagat	acgtaatcag	actatttcgtg	gagaagctca	agtaagactg	120
ggtgagttga	tgggtgtcaat	acgacctatg	caggtaaatg	gatatatttat	gggaagtctt	180
aaccaggatg	gtttatcgaa	tgataacatc	cagattggcc	ttcaatatat	agaacatatt	240
gaacgtacac	ttaatcatgg	tagtttgaca	agccgtgaag	ttacagtact	gcgtgaaatt	300
gagatgctcg	aaaatatgga	attgctttct	aactaccagt	tagaggagtt	gttagataaa	360
attgaagtat	gtgcatttaa	tgtggagcat	gcacaattgc	aagtgccaga	gagcttacga	420
acatgccctg	ttacattatg	tgaaccagaa	gatgggggtat	ttatgaggaa	ttcaatgaat	480
tcaaagtgtt	gtatgttgta	tgataaaatg	tcattaatat	atcttgtaa	aacaagggcg	540
gctcatcctt	tgagcagggg	atcaatcgca	gtttcaatga	ttgtaggaag	agataattgt	600
gcttttgact	ctgacagagg	taacttcggt	ttaaaaaatt	aa		642

<210> 68

<211> 642

<212> DNA

<213> Enterohemorrhagic E. coli

<400> 68

atgcctgtag	atttaacgcc	ttatatattta	cctgggggtta	gtttttttgtc	tgacattcct	60
caagaaacct	tgtctgagat	acgtaatcag	actatttcgtg	gagaagctca	aataagactg	120
ggtgagttga	tgggtgtcaat	acgacctatg	caggtaaatg	gatatatttat	gggaagtctt	180
aaccaggatg	gtttatcgaa	tgataaatatc	cagattggcc	ttcaatatat	agaacatatt	240
gaacgtacac	ttaatcatgg	tagtttgaca	agccgtgaag	ttacagtact	gcgtgaaatt	300
gagatgctcg	aaaatatgga	tttgctttct	aactaccagt	tagaggagtt	gttagataaa	360
attgaagtat	gtgcatttaa	tgtggagcat	gcacaattgc	aagtgccaga	gagcttacga	420
acatgccctg	ttacattatg	tgaaccagaa	gatgggggtat	ttatgaggaa	ttcaatgaat	480
tcaaagtgtt	gtatgttgta	tgataaaatg	gcattaatac	atcttgtaa	aacaagggcg	540
gctcatcctt	tgagcagggg	atcaatcgca	gtttcaatga	ttgtaggaag	agataattgt	600
gcttttgacc	ctgacagagg	taacttcggt	ttaaaaaatt	aa		642

<210> 69

<211> 630

<212> DNA

<213> Enterohemorrhagic E. coli

<400> 69

atgcctgtta	ccaccttaag	tatcccaagt	atatctcaat	tatctcctgc	aggagtacag	60
tctttgcagg	atgctgccag	acttgaaagt	ggaataagaa	tatccattgg	tagtggccaa	120
tattctgttc	actatgtcca	gctactggat	ggattttcag	ttgaaccggt	gagaggaggc	180
ttactggata	ggctattggg	gcgtgagcat	cgaatggaga	gaagggctgt	ggctctggaa	240
aggcaattaa	atggaggtgt	cgatttttta	agtagtggtta	ataactattt	tcagagtgtc	300
atggcagaac	acagagaaaa	taaaacaagt	aataaaaatat	taatggaaaa	aataaattct	360
tgtttattta	gacctgattc	taatcacttt	tcttgcccgg	agtcattttt	gacatgcccg	420
ataacgctgg	acacacctga	gactgggggtg	ttcatgagaa	actcacgagg	tgctgagata	480
tgctctctat	atgataagga	cgcgttagtg	caacttggtg	aaactggtgg	agctcatcct	540
ctgagtcgag	aacctataac	agaatcaatg	attatgagaa	aagatgaatg	tcactttgat	600
acaaaaagag	aagctttttg	ttgtaagtga				630

<210> 70

<211> 576

<212> DNA

<213> Enterohemorrhagic E. coli

<400> 70

atgccattaa	cctcagatat	tagatcacat	tcattttaatc	ttgggggtgga	ggttggttcgt	60
gcccgaattg	tagccaatgg	gcgcggagat	attacagtcg	gtggtgaaac	tgctcagatt	120
gtgtatgatt	ctactaatgg	gcgcttttca	tccagtggcg	gtaatggcgg	attgctttct	180

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gagttattgc ttttgggatt taatagtggc cctcgagccc ttggtgagag aatgctaagt 240
atgcttttcg actcaggtga agcacaatcg caagagagta ttcagaacaa aatatctcaa 300
tgtaagtttt ctgtttgtcc agagagactt cagtgccgcg ttgaggctat tcartgtcca 360
attacactgg agcagcctga aaaagggtatt tttgtgaaga attcagatgg ttcagatgta 420
tgtactttat ttgatgccgc tgcattttct cgttttggtg gtgaaggctt accccaccca 480
ctgaccgggg aaccaataac ggcatcaata attgtaaaac atgaagaatg catttatgac 540
gataccagag gaaacttcgt tataaagggt aattga 576

```

<210> 71
 <211> 510
 <212> DNA
 <213> Enterohemorrhagic E. coli

```

<400> 71
atggacgctt ttattgtaga tctgtttcaa ggggaactat attcggggtt aagccataca 60
gaactagccg atatcattag attggctgat tctgttgaaa atcaattgaa tggaggcaat 120
tcatttcttg atgtattcag tacatatatg ggcaggtta tttctgaatt tatgcatagt 180
aatgataaca gaattgaatt gttacagcgg cgattacatt catgttcatt tttagttaat 240
attgaagaaa tgtcttacat agatgaagca ttacagtgcc cgattacgct ggcaattcct 300
caacgaggtg tttttttaag aaatgctgaa ggttccagag tatgtagttt atatgatgaa 360
atggctcttt ctcgatataat taatgatggg atgcatcacc cactaagcag agagccaata 420
acattatcaa tgcttgtggc cagagagcag tgtgagtttg attgcagtat cggtcacttt 480
acggtgagga gtgattgtta ttcagtgtag 510

```

<210> 72
 <211> 231
 <212> DNA
 <213> Enterohemorrhagic E. coli

```

<400> 72
atggcagacc gcaaacagca ccgcgctatc gcggagcgtc gtcacatcca gactgaaatc 60
aaccgcagac tttcccgogc atcacgcgtc gcgcaaatca tgcacatcaa tatgctgcat 120
gagcgcagcc acgcactatc aaacatttat tccgcctctg ttttcagcta tctggcggat 180
gatctgcacg agtttcaaca gctcatccag cagcaaaaca aactccatta a 231

```

<210> 73
 <211> 176
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 73

```

Met Asn Val Leu Arg Ala Gln Val Ala Ser Ser Gly Arg Gly Glu Phe
1              5              10              15

```

```

Thr Leu Gly Asn Glu Thr Val Ser Ile Val Phe Asn Glu Thr Asp Gly
20              25              30

```

```

Arg Phe Leu Ser Ser Gly Ser Ser Gly Gly Leu Leu Thr Glu Leu Phe
35              40              45

```

```

Leu Tyr Gly Phe Asn Asn Gly Pro Glu Ala Leu Arg Asp Arg Met Leu
50              55              60

```

```

Ser Met Leu Ser Asp Ser Gly Glu Ala Gln Ser Gln Glu Ser Ile Gln
65              70              75              80

```

```

Asp Lys Ile Ser Gln Cys Lys Phe Pro Val Ser Ser Gly Asn Phe Gln
85              90              95

```

Cys Pro Pro Glu Ser Ile Gln Cys Pro Ile Thr Leu Glu Arg Pro Glu
 100 105 110
 Glu Gly Val Phe Val Lys Asn Ser Asp Ser Ser Ala Val Cys Cys Leu
 115 120 125
 Phe Asp Phe Asp Ala Phe Ser Arg Leu Ala Ser Glu Gly Ser Tyr His
 130 135 140
 Pro Leu Thr Arg Glu Pro Ile Thr Ala Ser Met Ile Ile Ser Pro Asp
 145 150 155 160
 Lys Cys Val Tyr Asp Pro Ile Lys Gly Asn Phe Ile Ile Lys Asp Ser
 165 170 175

<210> 74

<211> 303

<212> PRT

<213> Enterohemorrhagic E. coli

<400> 74

Met Leu Ser Pro Ser Ser Ile Asn Leu Gly Cys Ser Trp Asn Ser Leu
 1 5 10 15
 Thr Arg Asn Leu Thr Ser Pro Asp Asn Arg Val Leu Ser Ser Val Arg
 20 25 30
 Asp Ala Ala Val His Ser Asp Ser Gly Thr Gln Val Thr Val Gly Asn
 35 40 45
 Arg Thr Tyr Arg Val Val Val Thr Asp Asn Lys Phe Cys Val Thr Arg
 50 55 60
 Glu Ser His Ser Gly Cys Phe Thr Asn Leu Leu His Arg Leu Gly Trp
 65 70 75 80
 Pro Lys Gly Glu Ile Ser Arg Lys Ile Glu Ala Met Leu Asn Thr Ser
 85 90 95
 Pro Val Ser Thr Thr Ile Glu Arg Gly Ser Val His Ser Asn Arg Pro
 100 105 110
 Asp Leu Pro Pro Val Asp Tyr Ala Gln Pro Glu Leu Pro Pro Ala Asp
 115 120 125
 Tyr Thr Gln Ser Glu Leu Pro Arg Val Ser Asn Asn Lys Ser Pro Val
 130 135 140
 Pro Gly Asn Val Ile Gly Lys Gly Gly Asn Ala Val Val Tyr Glu Asp
 145 150 155 160
 Met Glu Asp Thr Thr Lys Val Leu Lys Met Phe Thr Ile Ser Gln Ser
 165 170 175
 His Glu Glu Val Thr Ser Glu Val Arg Cys Phe Asn Gln Tyr Tyr Gly
 180 185 190
 Ser Gly Ser Ala Glu Lys Ile Tyr Asn Asp Asn Gly Asn Val Ile Gly
 195 200 205

Ile Arg Met Asn Lys Ile Asn Gly Glu Ser Leu Leu Asp Ile Pro Ser
 210 215 220

Leu Pro Ala Gln Ala Glu Gln Ala Ile Tyr Asp Met Phe Asp Arg Leu
 225 230 235 240

Glu Lys Lys Gly Ile Leu Phe Val Asp Thr Thr Glu Thr Asn Val Leu
 245 250 255

Tyr Asp Arg Met Arg Asn Glu Phe Asn Pro Ile Asp Ile Ser Ser Tyr
 260 265 270

Asn Val Ser Asp Ile Ser Trp Ser Glu His Gln Val Met Gln Ser Tyr
 275 280 285

His Gly Gly Lys Leu Asp Leu Ile Ser Val Val Leu Ser Lys Ile
 290 295 300

<210> 75
 <211> 293
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 75

Met Leu Ser Pro Tyr Ser Val Asn Leu Gly Cys Ser Trp Asn Ser Leu
 1 5 10 15

Thr Arg Asn Leu Thr Ser Pro Asp Asn Arg Val Leu Ser Ser Val Arg
 20 25 30

Asp Ala Ala Val His Ser Asp Asn Gly Ala Gln Val Lys Val Gly Asn
 35 40 45

Arg Thr Tyr Arg Val Val Ala Thr Asp Asn Lys Phe Cys Val Thr Arg
 50 55 60

Glu Ser His Ser Gly Cys Phe Thr Asn Leu Leu His Arg Leu Gly Trp
 65 70 75 80

Pro Lys Gly Glu Ile Ser Arg Lys Ile Glu Val Met Leu Asn Ala Ser
 85 90 95

Pro Val Ser Ala Ala Met Glu Arg Gly Ile Val His Ser Asn Arg Pro
 100 105 110

Asp Leu Pro Pro Val Asp Tyr Ala Pro Pro Glu Leu Pro Ser Val Asp
 115 120 125

Tyr Asn Arg Leu Ser Val Pro Gly Asn Val Ile Gly Lys Gly Gly Asn
 130 135 140

Ala Val Val Tyr Glu Asp Ala Glu Asp Ala Thr Lys Val Leu Lys Met
 145 150 155 160

Phe Thr Thr Ser Gln Ser Asn Glu Glu Val Thr Ser Glu Val Arg Cys
 165 170 175

Phe Asn Gln Tyr Tyr Gly Ala Gly Ser Ala Glu Lys Ile Tyr Gly Asn
 180 185 190

Asn Gly Asp Ile Ile Gly Ile Arg Met Asp Lys Ile Asn Gly Glu Ser
 195 200 205
 Leu Leu Asn Ile Ser Ser Leu Pro Ala Gln Ala Glu His Ala Ile Tyr
 210 215 220
 Asp Met Phe Asp Arg Leu Glu Gln Lys Gly Ile Leu Phe Val Asp Thr
 225 230 235 240
 Thr Glu Thr Asn Val Leu Tyr Asp Arg Ala Lys Asn Glu Phe Asn Pro
 245 250 255
 Ile Asp Ile Ser Ser Tyr Asn Val Ser Asp Arg Ser Trp Ser Glu Ser
 260 265 270
 Gln Ile Met Gln Ser Tyr His Gly Gly Lys Gln Asp Leu Ile Ser Val
 275 280 285
 Val Leu Ser Lys Ile
 290

<210> 76
 <211> 50
 <212> PRT
 <213> Enterohemorrhagic E. coli
 <400> 76

Met Val Met Pro Gly Leu Val Ser Tyr Ile Ser Ser Thr Ser Phe Ala
 1 5 10 15
 Asn Glu Met Ala Glu Met Arg Gln Gln Val Met Glu Gly Gln Ile Gly
 20 25 30
 Gly Phe Leu Leu Gly Gly Glu Arg Val Arg Val Ser Tyr Leu Phe Gln
 35 40 45
 Leu His
 50

<210> 77
 <211> 191
 <212> PRT
 <213> Enterohemorrhagic E. coli
 <400> 77

Met Pro Leu Thr Ser Asp Ile Arg Ser His Ser Phe Asn Leu Gly Val
 1 5 10 15
 Glu Val Val Arg Ala Arg Ile Val Ala Asn Gly Arg Gly Asp Ile Thr
 20 25 30
 Val Gly Gly Glu Thr Val Ser Ile Val Tyr Asp Ser Thr Asn Gly Arg
 35 40 45
 Phe Ser Ser Ser Gly Gly Asn Gly Gly Leu Leu Ser Glu Leu Leu Leu
 50 55 60
 Leu Gly Phe Asn Ser Gly Pro Arg Ala Leu Gly Glu Arg Met Leu Ser
 65 70 75 80

Met Leu Ser Asp Ser Gly Glu Ala Gln Ser Gln Glu Ser Ile Gln Asn
 85 90 95

Lys Ile Ser Gln Cys Lys Phe Ser Val Cys Pro Glu Arg Leu Gln Cys
 100 105 110

Pro Leu Glu Ala Ile Gln Cys Pro Ile Thr Leu Glu Gln Pro Glu Lys
 115 120 125

Gly Ile Phe Val Lys Asn Ser Asp Gly Ser Asp Val Cys Thr Leu Phe
 130 135 140

Asp Ala Ala Ala Phe Ser Arg Leu Val Gly Glu Gly Leu Pro His Pro
 145 150 155 160

Leu Thr Arg Glu Pro Ile Thr Ala Ser Ile Ile Val Lys His Glu Glu
 165 170 175

Cys Ile Tyr Asp Asp Thr Arg Gly Asn Phe Ile Ile Lys Gly Asn
 180 185 190

<210> 78
 <211> 209
 <212> PRT
 <213> Enterohemorrhagic E. coli

<220>
 <221> MISC_FEATURE
 <222> (147)..(147)
 <223> Xaa = any amino acid

<400> 78

Met Pro Val Thr Thr Leu Ser Ile Pro Ser Ile Ser Gln Leu Ser Pro
 1 5 10 15

Ala Arg Val Gln Ser Leu Gln Asp Ala Ala Arg Leu Glu Ser Gly Ile
 20 25 30

Arg Ile Ser Ile Gly Ser Gly Gln Tyr Ser Val His Tyr Val Gln Leu
 35 40 45

Leu Asp Gly Phe Ser Val Glu Pro Val Arg Gly Gly Leu Leu Asp Arg
 50 55 60

Leu Leu Gly Arg Glu His Arg Met Asp Arg Arg Ala Val Ala Leu Glu
 65 70 75 80

Arg Gln Leu Asn Gly Gly Val Asp Phe Leu Ser Ser Val Asn Asn Tyr
 85 90 95

Phe Gln Ser Val Met Ala Glu His Arg Glu Asn Lys Thr Gly Asn Lys
 100 105 110

Ile Leu Met Glu Lys Ile Asn Ser Cys Val Phe Gly Thr Asp Ser Asn
 115 120 125

His Phe Ser Cys Pro Glu Ser Phe Leu Thr Cys Pro Ile Thr Leu Asp
 130 135 140

Thr Pro Xaa Thr Gly Val Phe Met Arg Asn Ser Arg Gly Ala Glu Ile
 145 150 155 160

Cys Ser Leu Tyr Asp Lys Asp Ala Leu Val Gln Leu Val Glu Thr Gly
 165 170 175

Gly Thr His Pro Leu Ser Arg Glu Pro Ile Thr Glu Ser Met Ile Met
 180 185 190

Arg Lys Asp Glu Cys His Phe Asp Ala Lys Arg Glu Ala Phe Cys Cys
 195 200 205

Lys

<210> 79
 <211> 213
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 79

Met Pro Val Asp Leu Thr Pro Tyr Ile Leu Pro Gly Val Ser Phe Leu
 1 5 10 15

Ser Asp Ile Pro Gln Glu Thr Leu Ser Glu Ile Arg Asn Gln Thr Ile
 20 25 30

Arg Gly Glu Ala Gln Val Arg Leu Gly Glu Leu Met Val Ser Ile Arg
 35 40 45

Pro Met Gln Val Asn Gly Tyr Phe Met Gly Ser Leu Asn Gln Asp Gly
 50 55 60

Leu Ser Asn Asp Asn Ile Gln Ile Gly Leu Gln Tyr Ile Glu His Ile
 65 70 75 80

Glu Arg Thr Leu Asn His Gly Ser Leu Thr Ser Arg Glu Val Thr Val
 85 90 95

Leu Arg Glu Ile Glu Met Leu Glu Asn Met Glu Leu Leu Ser Asn Tyr
 100 105 110

Gln Leu Glu Glu Leu Leu Asp Lys Ile Glu Val Cys Ala Phe Asn Val
 115 120 125

Glu His Ala Gln Leu Gln Val Pro Glu Ser Leu Arg Thr Cys Pro Val
 130 135 140

Thr Leu Cys Glu Pro Glu Asp Gly Val Phe Met Arg Asn Ser Met Asn
 145 150 155 160

Ser Asn Val Cys Met Leu Tyr Asp Lys Met Ser Leu Ile Tyr Leu Val
 165 170 175

Lys Thr Arg Ala Ala His Pro Leu Ser Arg Glu Ser Ile Ala Val Ser
 180 185 190

Met Ile Val Gly Arg Asp Asn Cys Ala Phe Asp Ser Asp Arg Gly Asn
 195 200 205

Phe Val Leu Lys Asn
210

<210> 80
<211> 213
<212> PRT
<213> Enterohemorrhagic E. coli

<400> 80
Met Pro Val Asp Leu Thr Pro Tyr Ile Leu Pro Gly Val Ser Phe Leu
1 5 10 15
Ser Asp Ile Pro Gln Glu Thr Leu Ser Glu Ile Arg Asn Gln Thr Ile
20 25 30
Arg Gly Glu Ala Gln Ile Arg Leu Gly Glu Leu Met Val Ser Ile Arg
35 40 45
Pro Met Gln Val Asn Gly Tyr Phe Met Gly Ser Leu Asn Gln Asp Gly
50 55 60
Leu Ser Asn Asp Asn Ile Gln Ile Gly Leu Gln Tyr Ile Glu His Ile
65 70 75 80
Glu Arg Thr Leu Asn His Gly Ser Leu Thr Ser Arg Glu Val Thr Val
85 90 95
Leu Arg Glu Ile Glu Met Leu Glu Asn Met Asp Leu Leu Ser Asn Tyr
100 105 110
Gln Leu Glu Glu Leu Leu Asp Lys Ile Glu Val Cys Ala Phe Asn Val
115 120 125
Glu His Ala Gln Leu Gln Val Pro Glu Ser Leu Arg Thr Cys Pro Val
130 135 140
Thr Leu Cys Glu Pro Glu Asp Gly Val Phe Met Arg Asn Ser Met Asn
145 150 155 160
Ser Asn Val Cys Met Leu Tyr Asp Lys Met Ala Leu Ile His Leu Val
165 170 175
Lys Thr Arg Ala Ala His Pro Leu Ser Arg Glu Ser Ile Ala Val Ser
180 185 190
Met Ile Val Gly Arg Asp Asn Cys Ala Phe Asp Pro Asp Arg Gly Asn
195 200 205

Phe Val Leu Lys Asn
210

<210> 81
<211> 209
<212> PRT
<213> Enterohemorrhagic E. coli

<400> 81

Met Pro Val Thr Thr Leu Ser Ile Pro Ser Ile Ser Gln Leu Ser Pro
1 5 10 15

Ala Gly Val Gln Ser Leu Gln Asp Ala Ala Arg Leu Glu Ser Gly Ile
 20 25 30

Arg Ile Ser Ile Gly Ser Gly Gln Tyr Ser Val His Tyr Val Gln Leu
 35 40 45

Leu Asp Gly Phe Ser Val Glu Pro Val Arg Gly Gly Leu Leu Asp Arg
 50 55 60

Leu Leu Gly Arg Glu His Arg Met Glu Arg Arg Ala Val Ala Leu Glu
 65 70 75 80

Arg Gln Leu Asn Gly Gly Val Asp Phe Leu Ser Ser Val Asn Asn Tyr
 85 90 95

Phe Gln Ser Val Met Ala Glu His Arg Glu Asn Lys Thr Ser Asn Lys
 100 105 110

Ile Leu Met Glu Lys Ile Asn Ser Cys Leu Phe Arg Pro Asp Ser Asn
 115 120 125

His Phe Ser Cys Pro Glu Ser Phe Leu Thr Cys Pro Ile Thr Leu Asp
 130 135 140

Thr Pro Glu Thr Gly Val Phe Met Arg Asn Ser Arg Gly Ala Glu Ile
 145 150 155 160

Cys Ser Leu Tyr Asp Lys Asp Ala Leu Val Gln Leu Val Glu Thr Gly
 165 170 175

Gly Ala His Pro Leu Ser Arg Glu Pro Ile Thr Glu Ser Met Ile Met
 180 185 190

Arg Lys Asp Glu Cys His Phe Asp Thr Lys Arg Glu Ala Phe Cys Cys
 195 200 205

Lys

<210> 82
 <211> 191
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 82

Met Pro Leu Thr Ser Asp Ile Arg Ser His Ser Phe Asn Leu Gly Val
 1 5 10 15

Glu Val Val Arg Ala Arg Ile Val Ala Asn Gly Arg Gly Asp Ile Thr
 20 25 30

Val Gly Gly Glu Thr Val Ser Ile Val Tyr Asp Ser Thr Asn Gly Arg
 35 40 45

Phe Ser Ser Ser Gly Gly Asn Gly Gly Leu Leu Ser Glu Leu Leu Leu
 50 55 60

Leu Gly Phe Asn Ser Gly Pro Arg Ala Leu Gly Glu Arg Met Leu Ser
 65 70 75 80

Met Leu Ser Asp Ser Gly Glu Ala Gln Ser Gln Glu Ser Ile Gln Asn
85 90 95
Lys Ile Ser Gln Cys Lys Phe Ser Val Cys Pro Glu Arg Leu Gln Cys
100 105 110
Pro Leu Glu Ala Ile Gln Cys Pro Ile Thr Leu Glu Gln Pro Glu Lys
115 120 125
Gly Ile Phe Val Lys Asn Ser Asp Gly Ser Asp Val Cys Thr Leu Phe
130 135 140
Asp Ala Ala Ala Phe Ser Arg Leu Val Gly Glu Gly Leu Pro His Pro
145 150 155 160
Leu Thr Arg Glu Pro Ile Thr Ala Ser Ile Ile Val Lys His Glu Glu
165 170 175
Cys Ile Tyr Asp Asp Thr Arg Gly Asn Phe Val Ile Lys Gly Asn
180 185 190

<210> 83
<211> 169
<212> PRT
<213> Enterohemorrhagic E. coli

<400> 83

Met Asp Ala Phe Ile Val Asp Pro Val Gln Gly Glu Leu Tyr Ser Gly
1 5 10 15
Leu Ser His Thr Glu Leu Ala Asp Ile Ile Arg Leu Ala Asp Ser Val
20 25 30
Glu Asn Gln Leu Asn Gly Gly Asn Ser Phe Leu Asp Val Phe Ser Thr
35 40 45
Tyr Met Gly Gln Val Ile Ser Glu Phe Met His Ser Asn Asp Asn Arg
50 55 60
Ile Glu Leu Leu Gln Arg Arg Leu His Ser Cys Ser Phe Leu Val Asn
65 70 75 80
Ile Glu Glu Met Ser Tyr Ile Asp Glu Ala Leu Gln Cys Pro Ile Thr
85 90 95
Leu Ala Ile Pro Gln Arg Gly Val Phe Leu Arg Asn Ala Glu Gly Ser
100 105 110
Arg Val Cys Ser Leu Tyr Asp Glu Met Ala Leu Ser Arg Ile Ile Asn
115 120 125
Asp Gly Met His His Pro Leu Ser Arg Glu Pro Ile Thr Leu Ser Met
130 135 140
Leu Val Ala Arg Glu Gln Cys Glu Phe Asp Cys Ser Ile Gly His Phe
145 150 155 160
Thr Val Arg Ser Asp Cys Tyr Ser Val
165

<210> 84
 <211> 76
 <212> PRT
 <213> Enterohemorrhagic E. coli

<400> 84

Met Ala Asp Arg Lys Gln His Arg Ala Ile Ala Glu Arg Arg His Ile
 1 5 10 15

Gln Thr Glu Ile Asn Arg Arg Leu Ser Arg Ala Ser Arg Val Ala Gln
 20 25 30

Ile Met His Ile Asn Met Leu His Glu Arg Ser His Ala Leu Ser Asn
 35 40 45

Ile Tyr Ser Ala Ser Val Phe Ser Tyr Leu Ala Asp Asp Leu His Glu
 50 55 60

Phe Gln Gln Leu Ile Gln Gln Gln Asn Lys Leu His
 65 70 75